



IMMEDIATE RESPONSE ACTION PLAN

Status Report 10

Cape Cod Gateway Airport
Hyannis, Massachusetts

RTN 4-26347

October 2021



Prepared for:
Cape Cod Gateway Airport
480 Barnstable Road Hyannis,
MA 02840

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IMMEDIATE RESPONSE ACTION PLAN STATUS REPORT 10
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
RTN 4-26347

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(Not Previously Submitted to MassDEP)

1.0 INTRODUCTION

Barnstable Municipal Airport
IRAP RTN 4-26347

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Horsley Witten Group, Inc.
October 14, 2021

The Horsley Witten Group, Inc. (HW) has been retained by the Cape Cod Gateway Airport (the “Airport”), formerly known as the Barnstable Municipal Airport, to develop this tenth Immediate Response Action (IRA) Plan Status Report for its property at 480 Barnstable Road, Hyannis, Massachusetts (Figure 1). HW has prepared this report in accordance with the Massachusetts Contingency Plan 310 CMR 40.0000 (MCP) on behalf of:

Ms. Katie Servis, Airport Manager
Cape Cod Gateway Airport
Hyannis, Massachusetts 02601
(508) 775-2020

The report describes IRA related activities conducted between April 2021 and October 2021.

2.0 SUMMARY OF IRA PLAN AND IRA MODIFICATION

An IRA was initiated in response to a Notice of Responsibility (NOR) for Release Tracking Number (RTN) 4-26347 dated November 10, 2016, issued to the Airport by the Massachusetts Department of Environmental Protection (MassDEP). The NOR requested that the Airport conduct additional field investigations to evaluate:

- The source(s) of Per- and Poly-Fluoroalkyl Substances (PFAS) including perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) previously detected in groundwater at the Airport and several adjacent properties;
- The source(s) of 1,4-dioxane, previously detected in a monitoring well downgradient of the Airport on the Maher wellfield property; and
- To identify potential impacts to public water supply wells operated by the Hyannis Water District at the Mary Dunn and Maher wellfields.

A proposed IRA plan was submitted for approval in response to the NOR. Subsequently, a meeting was held by MassDEP at the Airport that included other stakeholders including the Barnstable Department of Public Works, the Hyannis Water District and Barnstable County representatives (representing the Fire Training Academy). At the meeting, IRA plans were coordinated between the Airport and Fire Training Academy including sampling locations, type of analysis, groundwater modeling, goals, and next steps. The IRA plan served as the guide for the soil and groundwater testing conducted since November 2016 to follow up on the results of the previous analyses.

In June 2019, the MassDEP issued a Request for Modified Immediate Response Action Plan/Interim Deadline dated June 18, 2019 (the “Modified IRA Request”) to the Airport. The Modified IRA Request asked that the Airport propose response actions to *“reduce infiltration of precipitation through PFAS-impacted soil, such as temporarily capping the source areas; excavating and properly disposing of the PFAS-impacted soil; or some equivalent approach”*. The Airports response is documented in the report titled *Final Immediate Response Action Plan*

Modification, prepared by HW and dated December 2019 (the “IRA Modification”). The IRA Modification included details for the installation of a cap in two select areas to reduce precipitation infiltration. The two areas are identified as the Deployment Area and the Airport Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) Building Area. The two capped areas total approximately 94,100-square feet and represent a majority of the known PFAS in soil source areas relating to the historic application of aqueous film forming foam (AFFF) by the Airport. Areas of PFAS in soil remaining above the applicable Method 1 soil standard located outside of the capped area are indicated on Figure 2. Evaluation of these areas will be included in future response actions and/or included as part of a future risk assessment.

2.1 Background

Prior to issuance of the NOR, the Airport had conducted investigations on both 1,4-dioxane and PFAS and provided the results to MassDEP. In July 2015, HW sampled groundwater from seven groundwater monitoring wells for 1,4-dioxane. This contaminant was detected in groundwater monitoring well OW-9DD located in the Maher wellfield at a concentration of 0.926 micrograms per liter (ug/L). This concentration is above the applicable Method 1 standard of 0.30 ug/L. This groundwater monitoring well is screened from 77 to 87 feet below the ground surface.

At that time, it was thought that potential sources of 1,4-dioxane at the Airport could be related to a historic release of 1,1,1-trichloroethane (1,1,1-TCA) from an oil/water separator associated with a floor drain in the former Provincetown Boston Airlines hangar (currently leased to Cape Air) and/or from the application of deicing fluid. Given the screen depth of monitoring well OW-9DD, the 1,4-dioxane may also be from an off-Airport source.

On August 4, 2016, MassDEP issued a Request for Information (RFI) to the Airport requiring investigation of PFAS. On July 1 and 5, 2016, HW collected samples from six groundwater monitoring wells and submitted the samples for laboratory analysis of PFOS and PFOA. These compounds were detected in each of the wells tested. At monitoring wells HW-3 and HW-5, the sum of PFOS and PFOA were 0.0931 and 0.151 ug/L respectively, above the EPA health advisory limit and applicable MassDEP standard. PFOS and PFOA were also detected above the EPA health advisory limit and applicable MassDEP standard in monitoring well HW-1, located at the upgradient, western boundary of the Airport. Additional details about 1,4-dioxane and PFAS are included in the Phase II Comprehensive Site Assessment Report submitted to the MassDEP in March 2021 (the “Phase II Report”).

2.2 Actions Under the IRA Plan

A summary of the IRA activities conducted between April 2021 and October 2021 include:

- Installation of soil borings and groundwater monitoring wells;
- Soil sampling for PFAS;
- Soil sampling for total organic carbon (TOC);

- Groundwater Sampling for PFAS; and
- Groundwater sampling for 1,4-dioxane.

3.0 APPLICABLE MCP STANDARDS

Pursuant to 310 CMR 40.0900, the characterization of risk of harm to health, safety, public welfare, and the environment must be evaluated at each disposal site. This characterization includes the determination of site-specific soil and groundwater categories based on site location and use, and the comparison of laboratory results to these standards (310 CMR 40.0930).

In accordance with 310 CMR 40.0933, the applicable soil category is selected based upon the frequency, intensity of use, and accessibility of the Airport by adults and children. Based on these criteria, soil at the Airport is category S-1/GW-1 and S-1/GW-3.

Groundwater located within a Current Drinking Water Source Area is considered category GW-1. The Airport is located within several zones of contribution (Zone II) for Barnstable Village, the Hyannis Water District and the Town of Yarmouth. Zone IIs are considered current drinking water sources as defined in 310 CMR 40.0006; thus, category GW-1 is applicable.

Groundwater located within 30 feet of an occupied building that has an average annual depth of less than 15 feet is categorized as GW-2. This is primarily a concern because of the possibility of vapor impacts to indoor air. The average annual depth to groundwater at the Airport is greater than 15 feet; therefore GW-2 Standards do not apply. Also, all disposal sites shall be considered a potential source of discharge to surface water, and therefore categorized as GW-3. Based on these criteria, categories GW-1 and GW-3 are applicable to the Airport.

The soil and groundwater standards applicable to the Airport for PFAS and 1,4-dioxane as described in the document titled Final PFAS – Related Changes to the MCP – 2019-12-13 prepared by the MassDEP and promulgated December 27, 2019 are as follows:

Analyte	PFAS Standards			
	Soil Standard (ug/kg)		Groundwater Standard (ug/l)	
	S-1/GW-1	SW-1/GW-3	GW-1	GW-3
Pefluorodecanoic Acid (PFDA)	0.3	300	N/A	40,000
Perfluoroheptanoic Acid (PFHpA)	0.5	300	N/A	40,000
Perfluorohexanesulfonic Acid (PFHxS)	0.3	300	N/A	500
Perfluorononanoic Acid (PFNA)	0.32	300	N/A	40,000
Perfluorooctanesulfonic Acid (PFOS)	2	300	N/A	500

PFAS Standards				
Analyte	Soil Standard (ug/kg)		Groundwater Standard (ug/l)	
	S-1/GW-1	SW-1/GW-3	GW-1	GW-3
Perfluorooctanoic Acid (PFOA)	0.72	300	N/A	40,000
PFAS Sum of Six*	N/A	N/A	0.02	N/A

* PFAS Sum of Six is the sum of PFDA, PFHpA, PFHxS, PFNA, PFOS, and PFOA

1,4-dioxane			
Soil Standard (ug/kg)		Groundwater Standard (ug/l)	
S-1/GW-1	SW-1/GW-3	GW-1	GW-3
200 ug/kg	20,000 ug/kg	0.3	50,000

4.0 HISTORIC FIELD INVESTIGATIONS

Historic field investigations conducted at the Airport since the November 2016 NOR and documented in prior status reports are summarized below:

- An initial round of three soil samples were collected on December 9, 2016. One sample was taken from each location where it was determined that AFFF had been used at the Airport. The areas included the MCI Drill Area, the Deployment Area, and the 1991 Drill Location. Refer to Table 1 for tabulated PFAS in soil results.
- The installation of groundwater monitoring wells at six locations in April 2017: in the vicinity of potential sources of PFAS at the ARFF/SRE Area, at the Deployment Area and at upgradient locations outside of the Airport to evaluate potential off-site sources of PFAS and 1,4-dioxane. Refer to Table 2 and 3 for tabulated groundwater results.
- Groundwater from the new wells was initially sampled for PFAS and 1,4-dioxane in April 2017. Additional groundwater samples and one surface water sample were collected for analysis of PFAS on June 20, 2017. Refer to Table 2 and 3 for tabulated groundwater results.
- A second round of soil samples were collected on June 20, 2017 adjacent to the ARFF/SRE Building and within the Deployment Area to begin to determine the extent of PFAS within the surface soils. Based on the results of these analyses, a third round of samples from these two locations were collected on September 26, 2017. The third round of sampling was designed to further delineate the extent of PFAS in soils both horizontally and vertically, with samples taken at the ground surface and at two and four feet below ground surface (BGS). Refer to Table 1 for tabulated soil results.

- One sample of AFFF concentrate was analyzed for PFAS compounds. The analysis was inconclusive (only 225.5 ug/l of total PFAS was detected) and it is assumed that the sample was not homogeneous (i.e., had separated in the foam bucket) and that the addition of water to the concentrated may affect how precursor PFAS analytes transform into various other detectable PFAS compounds. Refer to Table 4 for tabulated AFFF concentrate results.
- Six soil samples were analyzed for PFAS leaching potential using a synthetic precipitation leaching procedure (SPLP) test between September and October 2017. The chosen samples included four samples from the Deployment Area and two samples from runway reconstruction soils stockpiled at the Airport. Refer to Table 5 for tabulated SPLP results.
- In October 2017, 20 surface samples were collected both on and off Airport property to determine the concentration of PFAS in the area. Refer to Table 6 for soil results and Figure 3 for the sample locations.
- In October 2017, three composite soil samples were taken from piles of soil associated with the redevelopment of Runway 15/33. These piles were located on Airport property at the site of the former Mildred's Restaurant and were analyzed for PFAS compounds to evaluate if soil removed from the Airport as part of this redevelopment contained PFAS. Refer to Table 6 for tabulated soil results.
- On August 14, 2018, 24 PFAS surface soil samples were collected in proximity to the ARFF/SRE Building Area and the Deployment Area. PFAS compounds were previously detected in these areas and additional samples were collected to determine the vertical extent of PFAS impacts in soil and to refine the soil disposal site boundary at the Airport. Refer to Table 1 for soil results.
- In October 2018, three soil borings (DL11, DL14 and HW-F) were advanced in the Deployment Area. One soil boring (ARFF3) was advanced, and one surface soil sample (HW-3) was collected near the ARFF/SRE Building in order to further delineate the extent of PFAS in soils both horizontally and vertically. All soil borings were advanced using direct push methods. Refer to Table 1 for soil results.
- In October 2018, six monitoring wells were installed at the Airport. A cluster of three wells (HW-G(s), HW-G(m), and HW-G(d)) was installed at an upgradient location to evaluate potential off-site sources of PFAS. Three additional wells (HW-H, HW-I, and HW-J) were installed southeast of the Deployment Area adjacent to the East Ramp. Refer to Table 2 for groundwater results.
- In November 2018, six groundwater samples were collected to evaluate PFAS concentrations in the Deployment Area. Four groundwater samples and one surface water sample from Mary Dunn Pond were also collected for analysis of oxygen and hydrogen isotopes to determine the contribution of pond water from Mary Dunn Pond

to the four downgradient monitoring wells. The analysis was inconclusive in tracing the contribution of pond water in the downgradient monitoring wells. Refer to Tables 3, 7 and 8 for groundwater and surface water results.

- In December 2018, two soil samples were collected from the 1991 Drill Location to determine if PFAS detected in the area are related to background conditions. Refer to Table 1 for soil results.
- In December 2018, 12 groundwater samples were collected for analysis of PFAS and 13 groundwater samples were collected for analysis of oxygen and hydrogen isotopes to determine the contribution of pond water from Mary Dunn Pond to the 13 downgradient wells. Groundwater samples were also collected from four monitoring wells in the Maher Wellfield for analysis of 1,4-dioxane. Refer to Tables 2, 3 and 8 for groundwater water results and Table 7 for surface water results.
- In February 2019, three additional surface soil samples were collected to further delineate the soil Disposal Site boundary around the ARFF/SRE building. Refer to Table 1 for soil results.
- In May and June 2019, HW installed nine groundwater monitoring wells to delineate the vertical and horizontal extent of PFAS and 1,4-dioxane at the Airport and on adjacent hydraulically upgradient properties. Refer to Tables 2 and 3 for groundwater results.
- In June 2019, eight groundwater samples were collected from newly installed groundwater monitoring wells HW-L, HW-K, HW-I (m), HW-I (d), HW-M, HW-D(d), HW-D (dd), and HW-N for PFAS. Refer to Table 2 for groundwater results.
- In July 2019, one groundwater sample was collected from the newly installed groundwater monitoring wells HW-O for PFAS. One groundwater sample was collected from HW-L for 1,4-dioxane. Refer to Tables 2 and 3 for groundwater results.
- In July 2019, two surface water samples were collected from Upper Gate and Lewis Ponds for PFAS analysis. Refer to Table 7 for surface water results.
- In August 2019, four groundwater samples were collected from monitoring wells HW-N, HW-A(d), HW-O, and HW-1 to evaluate potential sources of 1,4-dioxane entering the Airport from unknown upgradient sources(s). One groundwater sample was also collected from groundwater monitoring well HW-E for PFAS. Refer to Tables 2 and 3 for groundwater results.
- In August 2019, soil sample DL 11 (0-1) was collected from the Deployment Area. Refer to Tables 1 for soil results.
- In August 2019, six spray water samples were collected from discharge locations on a fire truck at the Airport. The samples were collected to verify that the valve mechanism that controls the mixing of AFFF with water was working appropriately. PFAS should not

be detected in the spray water. Although the spray water is not considered drinking water, PFAS was detected in each of the six samples collected above the GW-1 standard. Refer to Tables 9 for spray water results.

- On September 27, 2019, HW collected groundwater samples from six monitoring wells located on the Airport for 1,4-dioxane analysis. Refer to Table 3 for groundwater results.
- In November 2019, the Airport replaced the valve mechanism in the fire truck to ensure that AFFF was no longer mixing with the water despite the mechanism not being engaged. In December 2019, HW resampled the six discharge locations from the fire truck at the Airport. PFAS was detected at various concentrations at each location but all were below the GW-1 standard. Refer to Tables 9 for spray water results.
- Between May 5th and May 21st, 2020 HW collected 16 groundwater samples PFAS analysis. Refer to Table 2 for groundwater results.
- Between May 5th and May 13th, 2020 HW collected groundwater samples from four monitoring wells for 1,4-dioxane analysis. Refer to Table 3 for groundwater results.
- Between September 14th and September 24th, 2020 HW and Desmond Well Drilling installed 13 monitoring wells.
- On September 17, 2020 HW collected groundwater samples from the three Maher Wells (ME-1 through ME-3) for PFAS analysis. Refer to Table 2 for groundwater results.
- Between September 14th and September 30th, 2020 HW collected 23 soil samples for PFAS analysis. Refer to Table 1 for soil results.
- Between October 1 and October 7 2020, HW collected groundwater samples from 16 monitoring wells for PFAS. Refer to Table 2 for groundwater results.
- On October 2 and 7, 2020 HW collected groundwater samples from four monitoring wells for 1,4-dioxane analysis. Refer to Table 3 for groundwater results.
- Between November 5 and 6, 2020 HW collected five groundwater samples for PFAS analysis. Refer to Table 2 for groundwater results.
- On November 17, 2020 HW collected two roof samples (rubber membrane and asphalt shingle) from the ARFF/SRE building for SPLP PFAS. The testing was completed to determine if roofing materials were a potential source of PFAS in groundwater through stormwater infiltration. PFAS was detected in each of the samples collected. Although the leachate is not considered drinking water, the concentration of the MassDEP Sum of 6 were below the Method 1 GW-1 and GW-3 standards. Refer to Table 5 for SPLP PFAS results.
- On February 18 and 19th, 2021 HW conducted hydraulic conductivity testing at three monitoring well locations. Refer to the March 2021 Phase II Report for additional details.

- Between March 17th and March 19, 2021 HW collected 21 groundwater samples from the following monitoring wells for PFAS analysis as part of the first round of post-cap semiannual monitoring:

HW-R(s)	HW-I(d)	HW-2	HW-S(m)	RB-1(m)	OW-19(d)
HW-J	HW-E	HW-3	HW-P(s)	HW-K	
HW-I(s)	HW-F	HW-300	HW-P(m)	OW-19(s)	
HW-I(m)	HW-302	HW-S(s)	RB-1(s)	OW-19(m)	

In general, analytical results in the immediate vicinity of the cap area show a substantial reduction in total PFAS. Refer to Table 10 and 11 for a comparison of pre and post analytical results for select wells located within and downgradient of the cap. It is expected that it will take several years for wells downgradient of the caps to show substantial improvement. Analytical data packages are included in Appendix A and tabulated analytical data is included on Table 2.

Soil, surface water and groundwater sampling locations are indicated on Figures 2 through 4. Tabulated analytical data are included on Tables 1 through 12. Laboratory data packages and soil boring logs associated with historic field investigations have previously been submitted to MassDEP and are available in other IRA Status Reports or the March 2021 Phase II Report.

5.0 FIELD INVESTIGATIONS CONDUCTED DURING THE CURRENT REPORTING PERIOD

Details concerning field investigations conducted between April 2021 and October 2021 are summarized below.

- Between April 5th and April 7th, 2021, HW and Desmond Well Drilling installed monitoring wells HW-U(s), HW-U(m), HW-W(m), HW-W(d) and HW-W (dd) at the locations indicated on Figure 3. Soil boring logs are included in Appendix B.
- Between April 6th and 19th, 2021, HW collected 17 soil samples for TOC analysis from the three locations indicated on Figure 2. The TOC samples were collected from various depths between ground surface and 65 feet below grade. The TOC data is included on Table 12 and is being used to determine plume migration.
- On April 19, 2021, HW sampled the recently installed monitoring wells HW-U(s), HW-U(m), HW-W(m), HW-W(d) and HW-W (dd) for further analysis of PFAS compounds in groundwater. Analytical results confirm that PFAS above the applicable Method 1 GW-1 standard is migrating onto the Airport from unknown sources(s). The data also confirms that the Airport's PFAS plume in the vicinity of the Deployment Area has not yet migrated to the Maher Well field and that PFAS from unknown source(s) are migrating towards the Maher Well field. It is estimated that the Airport's PFAS plume in the Deployment Area (which exceeds the applicable Method 1 GW-1 standard) will likely be

detected at the HW-W cluster within the next year, or sooner. The Deployment Area plume is currently located between monitoring well cluster HW-S and HW-W.

- On September 7, 2021, HW and New England Geotech installed monitoring wells HW-X(s) and HW-X(m) at the locations indicated on Figure 4. Soil boring logs are included in Appendix B. The monitoring wells were installed adjacent to the former ARFF/SRE Building.
- On September 7, 2021, HW collected a soil sample from HW-X (m) at the location indicated on Figure 3 and submitted it for PFAS analysis. None of the MassDEP six regulated PFAS compounds were detected above the laboratory method detection limit. The laboratory report is included in Appendix A and soil boring logs are included in Appendix B. Tabulated analytical data is included on Table 1.
- On September 10, 2021, HW collected groundwater samples from HW-X (s) and HW-X(m) at the location indicated on Figure 4 and submitted them to Con-Test Analytical for PFAS and 1,4-dioxane analysis. The laboratory report is included in Appendix B and tabulated analytical data is included on Tables 2 and 3. 1,4-dioxane was not detected in either groundwater sample above the laboratory reporting limit. PFAS was detected above the applicable Method 1 GW-1 Standard in both locations.
- Between September 1 and September 11, 2021 HW collected 26 groundwater samples from the following monitoring wells for PFAS analysis as part of the second round of post cap semiannual monitoring:

HW-R(s)	Hw-I(d)	HW-2	HW-S(m)	RB-1(m)	OW-19(d)
HW-J	HW-E	HW-3	HW-P(s)	HW-K	HW-W(m)
HW-I(s)	HW-F	HW-300	HW-P(m)	OW-19(s)	
HW-I(m)	HW-302	HW-S(s)	RB-1(s)	OW-19 (m)	
HW-W(dd)	HW-U (s)	HW-U(m)	HW-U (d)	HW-W(d)	

Analytical results are included on Table 2 and laboratory reports are include in Appendix A. In general, analytical results in the immediate vicinity of the cap area show a substantial reduction in the sum of six PFAS (35 to 96 percent) relating to the Airport's AFFF PFAS plume. Refer to Tables 10 and 11 for additional details.

The deeper plume beneath the Deployment Area (HW-I[m] and HW-I[d]) and ARFF/SRE Building (HW-P[s] and HW-P[m]) relating to non-airport related source(s) continues to generally increase in concentration. Refer to Tables 10 and 11 for a comparison of pre and post analytical results for select wells located within and downgradient of the caps. It is expected that it will take several years for wells downgradient of the cap to show substantial improvement.

- On September 10, 2021, HW collected two groundwater samples from monitoring wells HW-E and HW-J located in the Deployment Area for 1,4-dioxane. 1,4-dioxane was not detected above the laboratory reporting limit. Refer to Figure 4 for the monitoring well

locations. Analytical data packages are included in Appendix A and tabulated data is included in Table 3. Groundwater data collected to date for 1,4-dioxane support that the release is entering the Airport from an unknown upgradient source in the vicinity of HW-V(m).

6.0 BI-ANNUAL CAP INSPECTION AND CAP PERFORMANCE MONITORING

HW inspected the asphalt cap on September 7, 2021, in the vicinity of the ARFF/SRE Building. The asphalt cap was free of cracks and significant depressions as indicated in the photos below.



HW inspected the geomembrane cap on September 7, 2021, in the vicinity of the Deployment Area. The sand and loam protective layer over the geomembrane cap were intact with no signs of significant erosion as indicated in the photos below.



As indicated above, HW collected 26 groundwater samples as part of the semi-annual cap inspections to determine the effectiveness of the caps. The first two rounds of post-cap monitoring are extremely promising and show a substantial decrease in PFAS concentrations in the immediate vicinity of the cap as indicated on Tables 10 and 11.

HW will continue to inspect the two cap areas every six months and collect groundwater samples from select existing monitoring wells to document the effectiveness of the caps. The next cap inspection and groundwater sampling event will take place in March 2021.

7.0 GROUNDWATER MODELING AND CONTAMINANT TRANSPORT ANALYSIS

A full evaluation of groundwater contaminant fate and transport characteristics is included in the Phase II Report submitted to MassDEP in March 2021. Additional groundwater testing and forensic techniques will be utilized to further refine the groundwater contaminant fate and transport characteristics.

8.0 UPGRADES TO AFFF TESTING PROTOCOLS AT THE AIRPORT

The Airport has purchased an Ecologic Foam Test System to allow the Airport to test the AFFF delivery systems on its current fire trucks without having to discharge the foam into the environment. The use of the new system meets the Federal Aviation Administration requirements for the regular testing of AFFF usage. Therefore, it is anticipated that no further foam will be deployed at the Airport except during an emergency situation when its use is required.

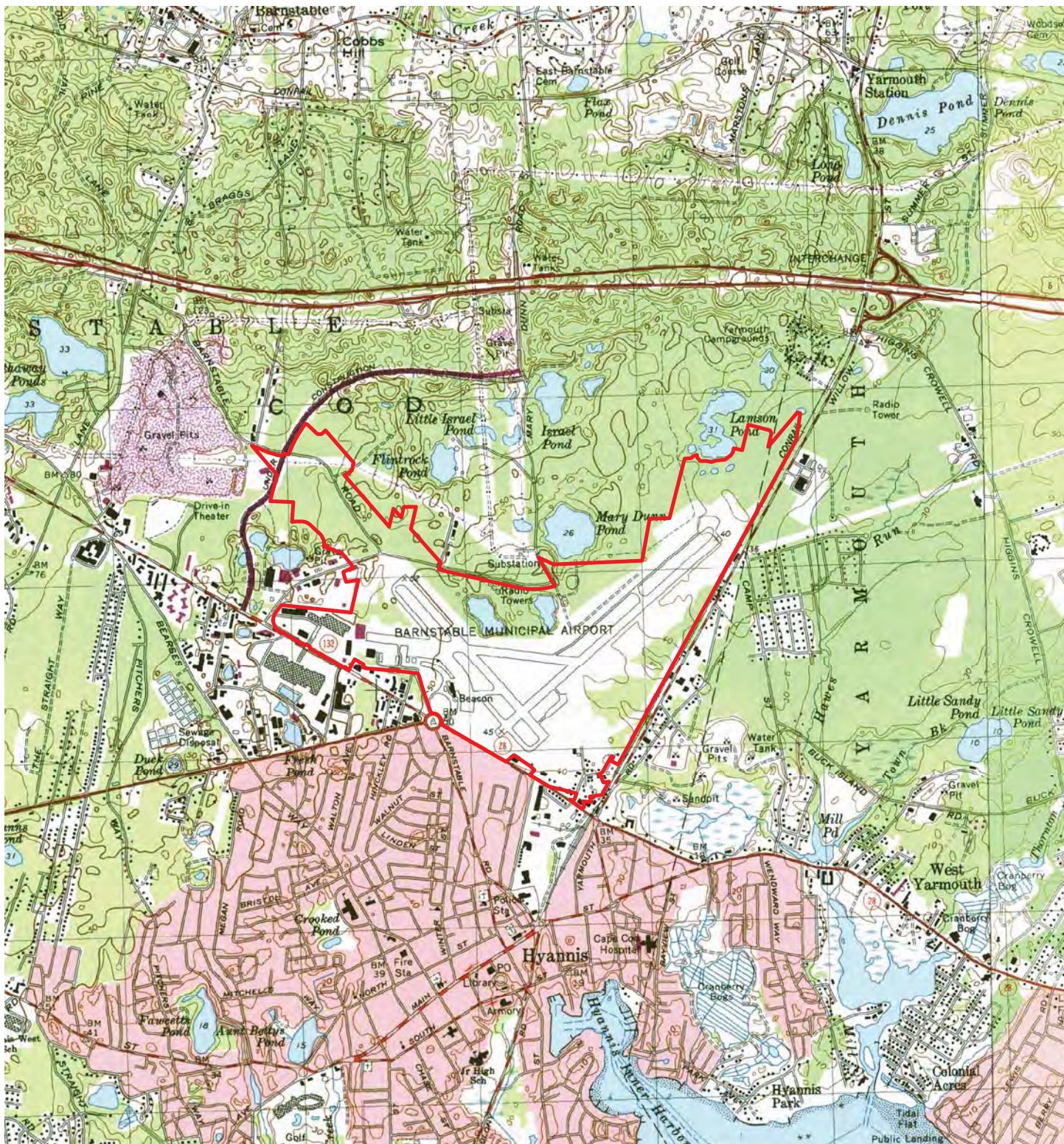
The Airport received a new fire fighting vehicle that deploys AFFF in September 2021 to replace an older fire fighting vehicle in the Airport's fleet. The FAA requires that AFFF be discharged from new equipment at the delivery location before the equipment enters service to verify that the vehicle systems operate normally and produce the appropriate AFFF mixture. The information from the AFFF discharge test will also be used to calibrate the AFFF consistency for future testing using the Ecologic cart so that future AFFF deployment will not be necessary. Appropriate precautions will be initiated to limit the possibility of a release of AFFF to the environment during the required testing. These precautions will include discharging AFFF into a closed vessel such as a fractank or other sealed container, the placement of polyethylene sheeting and visual monitoring by HW. The discharge container will be cleaned, and the contents disposed of by a licensed waste disposal company. Polyethylene sheeting will be placed in a 55-gallon drum for off-site disposal by a licensed waste disposal company. The testing event will be conducted inside an airport facility with floor drains connected to an oil water separator and sanitary sewer to ensure any AFFF that is not contained within the vessel or sheeting is not released into the environment. The testing event will be documented in a status report along with photographic documentation. The testing event is expected to be conducted within during the next reporting period.

9.0 PLANS FOR NEXT REPORTING PERIOD

HW will continue to conduct inspections of the two cap areas and monitor groundwater. Further testing of soil and/or groundwater is planned to refine the disposal site boundaries in the Deployment Area and ARFF Building Area. Future analytical results and boring logs will be included in future status reports.

FIGURES

- 1- USGS Locus
- 2- Soil Sample Locations
- 3- Background Soil Sample Locations
- 4- Monitoring Well Locations



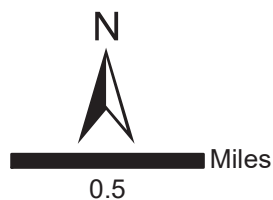
Document Path: H:\Projects\HYA\11072 (697 Barnstable Airport)\GIS_Maps\Maps\USGS_Locus_20130815.mxd

Legend



Airport Property Line

*Hyannis Topographic Quadrangle



Horsley Witten Group
Sustainable Environmental Solutions

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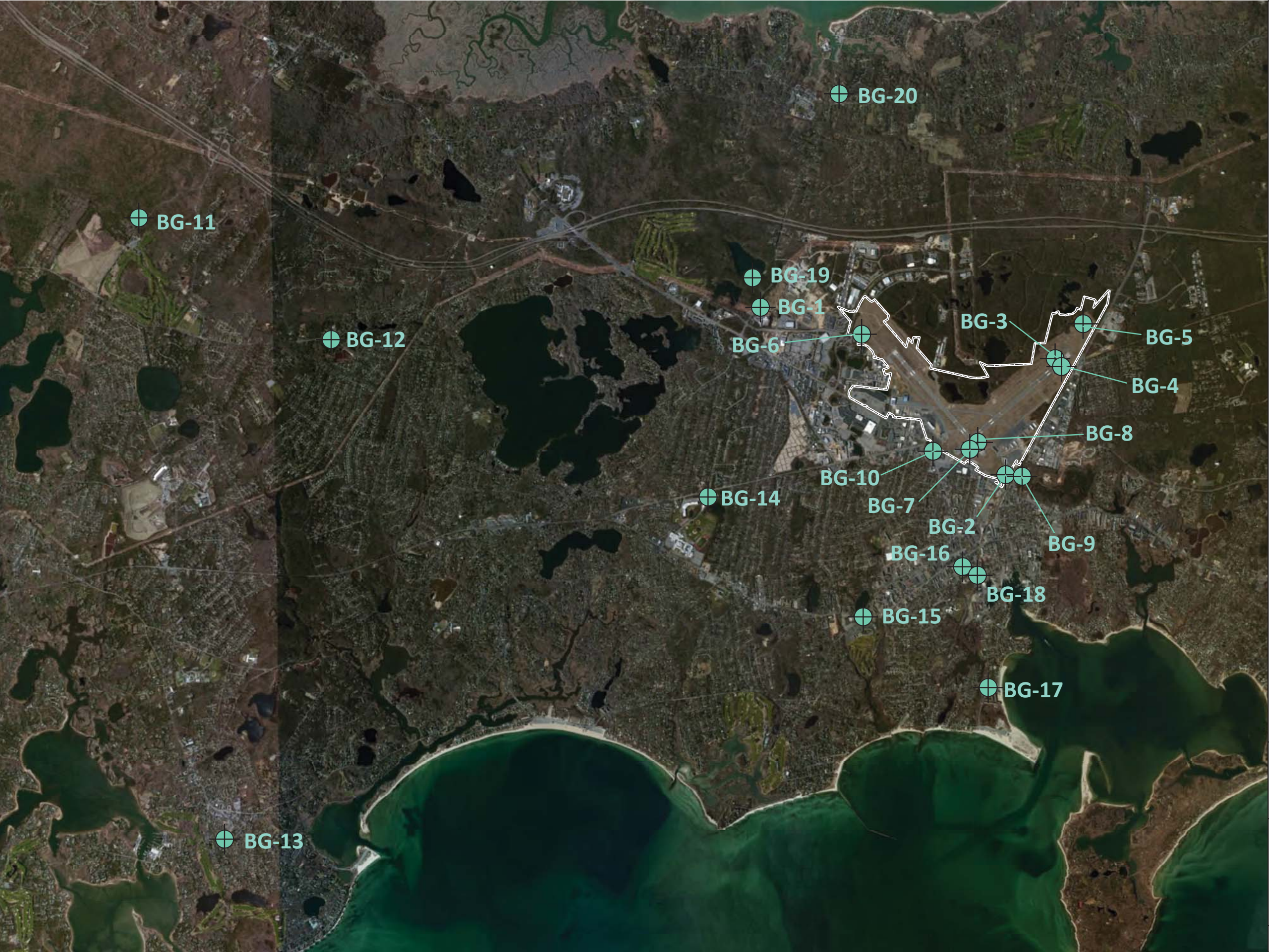
USGS Locus
Cape Cod Gateway Airport
Hyannis, MA

Date: 4/17/2018



Figure 1

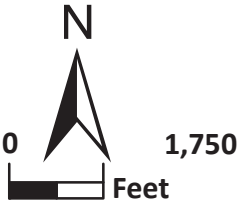


* Cape Cod Commission (CCC) Groundwater Contours



Legend

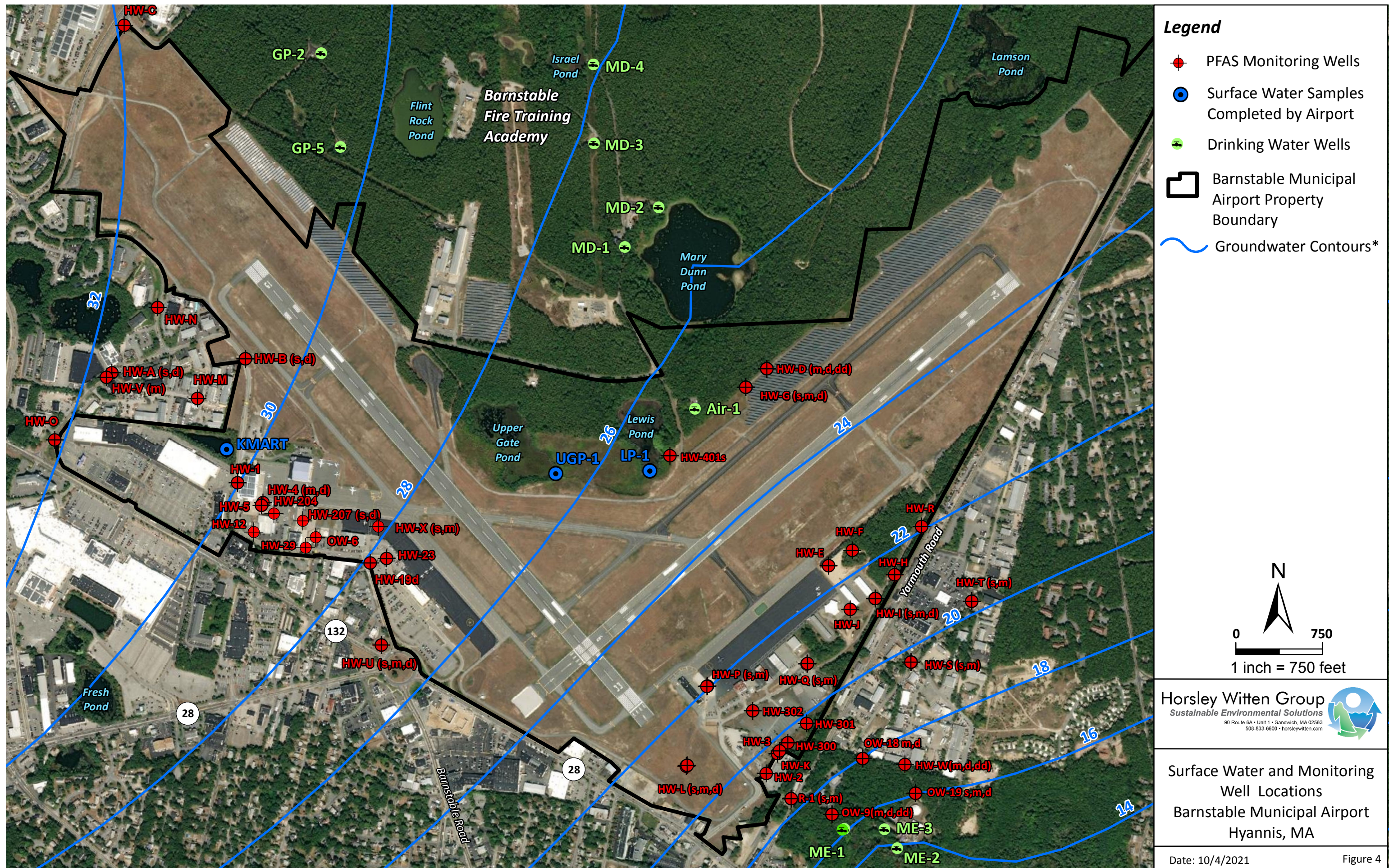
-  Background PFAS sample locations
-  Barnstable Municipal Airport Property Boundary



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Background
PFAS Sample Locations
Cape Cod Gateway Airport
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Table 1. Soil Results for PFAS Compounds ug/kg

Sample Location		ARFF Building																																									
Sample ID	Method 1 Standard	ARFF1 (0-1')	ARFF1 (2')	ARFF1 (4')	ARFF2 (0-1')	ARFF3 (0-1')	ARFF3 (10-12)	ARFF4 (0-1')	ARFFC8 (0-1)	A1 (0-1')	A2 (0-1')	A3 (0-1')	A4 (0-1')	A5 (0-1')	A5 (2-4)	A6 (0-1')	A7 (0-1')	A8 (0-1')	A9 (0-1')	A10 (0-1')	A11 (0-1')	A12 (0-1')	A13 (0-1')	A13 (0-1')	A14 (0-1')	A14 (0-1')	A15 (0-1')	A15 (0-1')	A16 (0-1')	A17 (0-1')	A18 (0-1)	A19 (0-1)	A20 (0-1)	A20 (2-4)	A21 (0-1)	A22 (0-1)	HW-P(M) [8-10]	HW-P(M) [18-20]	DL1 (0-1')				
Sample Date	S-1/GW-1	S-1/GW-3	6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	10/9/2018	9/26/2017	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	9/24/2020	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	2/27/2019	9/29/2020	2/27/2019	5/13/2020	2/27/2019	5/13/2020	9/17/2020	9/29/2020	9/24/2020	9/24/2020	9/24/2020	9/24/2020	9/29/2020	9/18/2020	9/18/2020	6/20/2017						
Perfluorheptanoic acid (PFHpA)	0.5	300	0.82 J	1.8	0.66 J	0.17 U	0.60 J	0.32 J	0.75 J	0.60 J	0.19 U	0.19 U	0.38 J	0.19 U	1.1	0.089 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	<2.0	0.396 J	<1.9	0.51 J	<2.0	0.21 U	0.067 J	1.07	0.076 J	0.101 J	0.09 U	0.09 U	0.045 U	0.096 J	0.044 U	0.043 U	0.30 J					
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	0.23 U	0.23 U	0.23 U	0.23 U	0.64 J	0.24 U	0.23 U	0.23 U	0.24 U	0.24 U	0.24 U	0.24 U	0.12 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	<2.0	0.058 U	<1.9	0.24 U	<2.0	0.21 U	0.085 J	0.058 U	0.054 U	0.059 U	0.121 U	0.121 U	0.06 U	0.055 U	0.059 U	0.058 U	0.23 U					
Perfluorooctanoic acid (PFOA)	0.72	300	0.75 J	2.6	0.75 J	0.26 U	0.78 J	1.9	0.97 J	0.90 J	0.25 U	0.25 U	0.37 J	0.30 J	1.9	0.228 J	0.25 U	0.25 U	0.25 U	0.34 J	0.25 U	<2.0	0.67 J	<1.9	0.68 J	<2.0	0.14 U	0.088 J	0.989	0.111 J	0.129 J	0.196 J	0.147 J	0.042 U	0.069 J	0.089 J	0.046 J	0.26 U					
Perfluorononanoic acid (PFNA)	0.32	300	2.5	5.7	1.4	0.20 J	0.91 J	3.1	2.9	2.9	0.17 U	0.22 U	0.22 U	0.51 J	0.22 U	0.87 J	0.148 U	0.22 U	0.22 U	0.22 U	0.22 U	<2.0	1.2	<1.9	0.54 J	<2.0	0.15 U	0.119 J	0.774 J	0.281 J	0.246 J	0.15 U	0.15 U	0.075 U	0.11 J	0.073 U	0.072 U	0.17 U					
Perfluorooctane sulfonate (PFOS)	2	300	4.5	2.7	1.1	0.29 J	4.4	1.1	1.0	1.0	0.26 U	0.26 U	0.29 J	0.26 U	0.26 U	0.37 U	0.26 U	0.38 J	0.26 U	0.26 U	<2.0	1.3	<1.9	0.32 J	<2.0	0.29 J	2.02	0.57 J	1.15	0.611 J	0.259 U	0.26 U	4.576 J	0.559 J	0.0327 U	0.0324 U	0.40 J						
Perfluorodecanoic Acid (PFDA)	0.3	300	4.4	1.2	0.62 J	0.13 U	1.6	0.28 U	0.85 J	0.13 U	0.28 U	0.28 U	0.42 J	0.28 U	1.4	0.133 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	<2.0	0.34 J	<1.9	0.95 J	<2.0	0.15 U	0.074 J	0.147 J	0.146 J	0.066 U	0.134 U	0.134 U	0.067 U	0.119 J	0.065 U	0.064 U	0.63 J					
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																											
Total PFAS	NA	NA	120.06	41.75	46.85	1.16	23.72	11.03	11.9	95.43	0	0	6.2	1.14	161.07	0.613	1.5	1.35	0.48	1.92	1.1	0.43	0	0.0	5.2	0	13.15	0.0	0.45	3.131	11.267	2.652	1.409	0.316	0.147	0.571	1.412	0.411	0.09	11.14			
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	12.97	14	4.53	0.49	8.93	6.42	6.47	2.6	0	0	1.97	0.3	5.27	0.228	0	0.38	0	1.19	0.33	0	0	0	3.916	0	3	0	0.29	2.453	3.553	1.764	1.087	0.196	0.147	0.276	0.953	0.089	0.046	1.33			
Sample Location		Deployment Area																																									
Sample ID	Method 1 Standard	DL2 (0-1')	DL2 2'	DL2 4'	DL3 (0-1')	DL3 2'	DL3 4'	DL4 (0-1')	DL4 2'	DL4 4'	DL5 (0-1')	DL5 2'	DL5 4'	DL6 (0-1')	DL7 (0-1')	DL8 (2')	DL8 (4')	DL9 (0-1')	DL10 (0-1')	DL11 (0-1')	DL11 (0-1')	DL11 (4-6')	DL11 (10-12')	DL11 (14-16')	DL12 (0-1')	DL13 (0-1')	DL14 (0-1')	DL14 (4-6')	DL14 (10-12')	DL14 (14-16')	DL15 (0-1)	DL16 (0-1)	DL17 (0-1)	DL18 (0-1)	DL19 (0-1)	DL20 (0-1)	DL21 (0-1)	DL22 (2-4)	DL22 (6-8)				
Sample Date	S-1/GW-1	S-1/GW-3	6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	6/20/2017	9/26/2017	9/26/2017	6/20/2017	6/20/2017	6/20/2017	9/26/2017	6/20/2017	6/20/2017	6/20/2017	8/20/2019	10/4/2018	10/4/2018	10/4/2018	9/26/2017	9/16/2017	9/26/2017	10/4/2018	10/4/2018	10/4/2018	9/30/2020	9/30/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020					
Perfluorheptanoic acid (PFHpA)	0.5	300	1.9	1.2	0.48 J	0.84 J	0.17 U	0.17 U	0.31 J	0.17 U	2.5	0.40 J	0.50 J	5.0	2.5 J	2.9 J	4.7 J	0.66 J	1.3	2.1	1.8	1.3	0.31 J	0.23 J	1.2	1.6	4.9	0.36 J	0.19 U	1.4	0.175 U	0.138 J	0.167 U	0.319 J	0.145 U	0.157 U	0.158 U	0.109 J	0.481 J				
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	1.8	1.3	0.59 J	0.34 J	0.23 U	0.23 U	0.23 U	0.23 U	0.49 J	0.49 J	0.23 U	0.23 U	2.3 U	2.3 U	2.3 U	0.35 J	0.94 J	0.82 J	<0.9	0.24 U	0.24 U	0.24 U	0.23 U	0.23 U	0.71 J	0.24 U	0.24 U	0.74 J	0.235 U	0.057 U	0.224 U	0.159 J	0.194 U	0.21 U	0.212 U	0.057 U	0.07 J				
Perfluorooctanoic acid (PFOA)	0.72	300	1.6	4.1	0.74 J	0.80 J	0.26 U	0.26 U	0.83 J	0.26 U	0.26 U	3.7	1.6	0.26 U	0.26 U	4.2 J	25	22	0.68 J	1.7	4.7	5.2	2.9	1.9	0.50 J	4.6	2.4	23	0.58 J	0.32 J	2.9	0.334 J	0.223 J	0.166 J	0.979 J	0.135 U	0.146 U	0.159 J	0.447 J	1.32			
Perfluorononanoic acid (PFNA)	0.32	300	0.81 J	2.5	0.17 U	0.55 J	0.17 U	2.7	0.17 U	3.7	0.19 J	0.17 U	0.17 U	0.19 J	9.6 J	46	1.7 U	0.22 J	0.17 U	16	2.4	2.5	0.22 U	0.22 U	7.3	1.5	10	0.292 U	0.285 J	0.277 U	0.296 J	0.241 U	0.261 U	0.263 U	3.46	2.66							
Perfluorooctane sulfonate (PFOS)	2	300	12	1.5	0.21 U	0.51 J	0.21 U	2.0	0.21 U	0.50 J	0.21 U	0.21 U	0.21 U	0.21 U	3.9 J	14	2.1 U	0.38 J	0.26 J	29	1.5	2.9	1.5	0.66 J	7.6	0.26 U	0.26 U	23	0.66 J	7.6	0.26 U	0.26 U	2.3	0.505 U	0.575 J	0.481 U	1.05 J	0.418 U	0.452 U	0.656 U	20.3	8.85	
Perfluorodecanoic Acid (PFDA)	0.3	300	0.13 U	0.13 U	0.13 U	1.4	0.13 U	0.13 U	1.3	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.3 U	1.3 U	1.3 U	0.13 U	0.13 U	1.8	8.7	0.28 U	0.28 U	0.28 U	0.66 J	7.4	9.6	0.28 U	0.28 U	0.28 U	0.26 U	0.181 J	0.248 U	0.167 J	0.215 U	0.233 U	0.235 U	0.834 J	0.383 J				
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																											
Total PFAS	NA	NA	24.41	12.17	2.38	84.86	9.56	13.81	9.6	0.88	5.9	11.03	2.49	0.5	18.59	404.4	1727.2	949.6	6.38	9.1	85.22				91.5	11.07	6.82	7.63	108.56	521.26	598.24	50.11	21.22	116.64	4.523	2.269	0.628	4.84	0	0	0.68	66.813	41.988
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	18.11	10.6	1.81	4.44	0	0	7.14	0	4.2	6.88	2.49	0.5	5.19	20.2	87.9	26.7	2.29	4.2	54.42				19.6	6.7	2.21	0.73	36.76	13.56	55.81	0.94	0.32	17.34	0.334	1.402	0.166	2.97	0	0	0.159	27.15	13.764
Sample Location		Deployment Area																																									
Sample ID	Method 1 Standard	DL22 (18-20)	DL23 (0-1)	D1 (0-1')	D2 (0-1')	D3 (0-1')	D4 (0-1')	D5 (0-1')	D6 (0-1')	D7 (0-1')	D8 (0-1')	D9 (0-1')	D10 (0-1')	D11 (0-1')	D12 (0-1')	HW-F (10-12')	HW-F (14-16')	HW-3 (0-1')	MCI Drill (0-1)	Annual Deployment (0-1)																							
Sample Date	S-1/GW-1	S-1/GW-3	9/25/2020	9/29/2020	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	10/4/2018	10/4/2018	10/9/2018	12/9/2016	12/9/2016																							
Perfluorheptanoic acid (PFHpA)	0.5	300	0.073 J	0.24 J	0.19 U	0.21 J	0.19 U	0.95 J	0.22 J	7.8	1.0	2.7	0.19 U	0.19 U	0.32 J	1.3	0.19 U	8.4	20																								
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	0.059 U	0.134 J	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.31 J	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.5 J	4 U																								
Perfluorooctanoic acid (PFOA)	0.72	300	0.176 J	0.471 J	0.25 U	0.33 J	0.25 U	1.1	0.25 U	0.28 J	14	2.2	3	0.25 U	0.25 U	0.25 U	0.25 U	1.4	23	100																							
Perfluorononanoic acid (PFNA)	0.32	300	0.476 J	0.176 J	0.22 U	0.67 J	0.22 U	0.98 J	0.22 U	10	0.59 J	0.83 J	0.22 U	0.22 U	0.32 J	0.32 U	0.22 U	14	31																								
Perfluorooctane sulfonate (PFOS)	2	300	1.18	0.725 J	0.26 U	0.66 J	0.38 J	2.9	0.26 U	0.26 U	3.4	2.1	0.67 J	0.54 J	0.91 J	0.44 J	0.26 U	0.26 U	24	1.9 J																							
Perfluorodecanoic Acid (PFDA)	0.3	300	0.065 U	0.266 J	0.28 U	0.28 U	0.28 U	0.40 J	0.28 U	0.66 J	8.6	1.3	1.6	0.28 U	0.28 U	0.28 U	0.28 U	20	69																								
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																											
Total PFAS	NA	NA	11.352	4.053	0.74	1.87	0.94	11.42	3.01	9.06	151.24	24.61	43.41	0.83	1.62	1.47	25.27	146.5	0	1.524	5.972.9																						
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	1.905	2.012	0	1.87	0.38	6.33	0.22	1.19	43.8	7.5	8.8	0.54	0.91	0.76	0.32	2.7	0	89.9	227.9																						
Sample Location		1991 Drill Location																																Old ARFF/SRE Building									
Sample ID	Method 1 Standard	1991A (0-1')	1991B (0-1')	1991C (0-1')	1991D (0-1')	1991A-B (3-4')	1991C-D (2-3')	HW-X(m) [7-9]																																			
Sample Date	S-1/GW-1	S-1/GW-3	8/14/201																																								

Table 2. Groundwater Results for PFAS Compounds ug/L

Sample Location		North Ramp												Lewis Pond												Airport Road / Iymnough Road Area												ARFF Building Area											
Sample ID	HW-1	HW-1	HW-1	HW-4M	HW-5	HW-5	HW-23	HW-23	HW-19D	HW-19D	HW-X(G)	HW-X(m)	HW-4015	HW-A(S)	HW-B(S)	HW-B(S)	HW-B(L)	HW-C	HW-M	HW-N	HW-O	HW-U(G)	HW-U(m)	HW-U(m)	HW-U(G)	HW-U(G)	HW-U(G)	HW-V(m)	HW-L (s)	HW-L (m)	HW-L (G)	HW-L (G)	HW-P (s)	HW-P (s)	HW-P (m)	HW-P (m)	HW-Q (s)	HW-Q (s)	HW-Q (m)										
Sample Date	7/1/2016	6/20/2017	11/1/2018	4/5/2017	7/1/2016	4/7/2017	11/1/2018	6/20/2017	11/1/2018	6/20/2017	11/7/2018	9/10/2021	9/7/2021	4/7/2017	4/7/2017	10/26/2018	10/26/2018	4/7/2017	6/24/2019	6/24/2019	7/2/2019	4/19/2021	9/5/2021	4/19/2021	9/5/2021	10/1/2020	9/5/2021	10/1/2020	6/19/2019	10/1/2020	3/18/2021	9/8/2021	10/1/2020	3/18/2021	11/6/2020	10/1/2020													
TOC Elevation	51.51	51.51	51.51	54.02	54.98	54.98	54.98	50.65	50.65	49.10	49.10	NA	NA	41.58	55.34	51.84	51.84	51.95	69.25	53.69	49.49	43.46	NA	NA	NA	NA	48.80	48.80	39.07	38.98	39.15	39.15	40.51	40.51	40.64	40.64	37.89	37.89											
Depth to Groundwater	21.63	25.00	21.83	26.20	24.94	26.75	25.27	22.70	24.01	21.29	22.19	24.74	25.21	17.95	24.62	22.26	21.59	21.66	38.50	20.32	15.48	3.62	23.59	24.53	23.50	24.49	24.66	25.24	22.90	21.96	21.88	19.40	22.22	22.69	22.09	23.54	22.80												
Groundwater Elevation	29.88	26.51	29.68	27.82	30.04	28.23	29.71	27.95	26.64	27.81	26.91	NA	NA	23.63	30.72	29.58	30.25	30.75	33.37	34.01	39.84	NA	NA	NA	NA	24.14	23.56	30.93	17.11	17.10	19.75	16.93	17.82	18.42	16.97	17.84	18.44												
Total Well Depth	30.84	30.84	30.84	32.32	27.80	27.80	27.80	28.11	28.11	41.30	41.30	NA	NA	36.82	23.60	26.22	26.22	42.15	26.92	22.33	14.10	28.49	28.83	38.93	38.93	62.30	36.15	27.33	27.33	70.55	70.55	27.60	27.60	27.60	38.30	38.30													
Perfluorooctanoic acid (PFHpA)	0.01	0.0042 U	0.013 U	0.007 U	0.0041	0.0084 U	0.0074 U	0.0045U	0.0098 U	0.0052 U	0.0080 U	0.0061	0.0034	0.0043 U	0.0048 U	0.049	0.012 U	0.0074 U	0.0033 U	0.007	0.0034	<0.002	0.002 U	0.004	0.0018 U	0.0049	0.01	0.01	0.0033	0.00053 U	0.0064	0.0078	0.0065	0.0026	0.0067	0.004													
Perfluorohexanesulfonic acid (PFHxS)	0.018	0.065	0.018 U	0.02	0.011	0.018 U	0.0096 U	0.021	0.023	0.046	0.045	0.047	0.0021	0.011 U	0.0079 U	0.044	0.047	0.0096 U	0.0034 U	0.016	0.033	0.0043	0.01	0.0034	0.0043	0.011	0.018	0.022	0.0032	0.0013	0.023	0.033	0.015	0.0018	0.00074 U	0.00056 U	0.00085	0.0015 U											
Perfluorononanoic acid (PFNA)	<0.002	0.0057 U	0.0087 U	0.0046 U	<0.002	0.0046 U	0.0088 U	0.0038 U	0.0087 U	0.0065 U	0.0087 U	0.0049 U	0.002	0.0046 U	0.0046 U	0.0046 U	0.0087 U	0.0087 U	0.0046 U	<0.002	<0.002	0.0033 U	0.0017 U	0.00083 U	0.0011 U	0.0016	0.005	0.0017	0.00063 U	0.0025	0.0033	0.0022	0.0061	0.002	0.0013 U	0.0011	0.006												
Perfluorooctanoic acid (PFOA)	0.033	0.002	0.031	0.011 U	0.031	0.030 U	0.011 U	0.0046 U	0.011 U	0.017 U	0.014 U	0.013	0.0062	0.0046 U	0.0026 U	0.0094 U	0.030 U	0.012 U	0.0026 U	0.0074	0.004	0.017	0.06	0.029	0.0093	0.027	0.023	0.051	0.0059	0.0014	0.07	0.049	0.039	0.00907	0.00049 U	0.00054 U	0.0011	0.0035											
Perfluorooctane sulfonate (PFOS)	0.017	0.24	0.028	0.043	0.12	0.052	0.12	0.0079 U	0.015 U	0.061	0.059	0.068	0.034	0.012 U	0.0026 U	0.026	0.019 U	0.010 U	0.0026 U	0.0074	0.004	0.017	0.06	0.029	0.0093	0.027	0.023	0.051	0.0059	0.0014	0.07	0.049	0.039	0.00907	0.00049 U	0.00054 U	0.0011	0.0035											
Perfluorodecanoic acid (PFDA)	NA	0.0040 U	0.0061 U	0.0040 U	NA	0.0040 U	0.0061 U	0.0040 U	0.0061 U	0.0040 U	0.0061 U	0.0050 U	0.0042	0.0040 U	0.0040 U	0.0040 U	0.0061 U	0.0061 U	0.0040 U	<0.002	<0.002	0.0021	0.00064 U	0.0011 U	0.00038 U	0.001 U	0.00062 U	0.0025 U	0.00062 U	0.00062 U	<0.002	0.0019	0.00085	0.0004 U	0.00048 U	0.00062 U	0.00038 U												
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.0032 U	0.0066 U	0.0038 U	NA	0.0037 U	0.0066 U	0.0032 U	0.0066 U	0.0032 U	0.0066 U	0.0020 U	0.0033 U	0.0034 U	0.0034 U	0.0032 U	0.0066 U	0.0066 U	0.0034 U	<0.002	<0.002	0.002 U	0.00034 U	0.0011 U	0.00038 U	0.001 U	0.00075	0.00012	0.004	0.00039 U	0.00039 U	0.0022	0.0021	0.00078	0.01	0.0034	0.00092												
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																																	
Total PFAS	0.078	0.4247	0.15	0.1162	0.1661	3.0021	0.1507	0.0745	0.0858	0.1758	0.16	0.18221	0.10025	0.0913	0.0779	0.4561	0.186	0.0465	0.0034	0.0927	0.0727	0.0585	0.09704	0.06596	0.03622	0.0839	0.0889	0.1775	0.0543	0.0027	0.18375	0.1823	0.12348	0.2478	0.06294	0.05055													
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFOA)	0.078	0.3369	0.09	0.081	0.1661	0.0984	0.1398	0.0334	0.0588	0.1357	0.136	0.13459	0.0519	0.0273	0.0127	0.1284	0.098	0.022	<0.0046	0.0574	0.0492	0.0273	0.08144	0.0439	0.02173	0.0534	0.0588	0.0987	0.0204	0.0027	0.1119	0.1181	0.0826	0.04412	0.01453	0.00756													
Sample Location		Yarmouth Road												Deployment Area														Yarmouth Road																					
Sample ID	HW-1 (s)	HW-1 (s)	HW-1 (s)	HW-1 (s)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)	HW-1 (m)												
Sample Date	11/7/2018	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020	3/17/2021	9/8/2021	6/24/2019	5/8/2020											
TOC Elevation	36.08	36.08	36.08	36.08	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27													
Depth to Groundwater	18.35	15.39	18.42	19.94	16.33	15.61	18.66	20.17	16.20	15.49	18.52	20.04	19.18	19.34	20.60	19.05	19.38	17.82	16.16	23.35	25.02	19.60	20.08	16.82	20.01	21.72	20.39	17.37	18.33	17.37	19.00	16.88	16.29	17.30	17.01	16.35													
Groundwater Elevation	17.73	20.69	17.66	16.14	19.94	20.66	17.61	16.10	19.82	17.51	16.50	15.98	17.92	17.76	16.50	15.40	16.72	16.63	22.29	15.10	13.43	16.72	14.60	16.35	17.39	18.35	16.72	14.72	15.31	14.30	14.58	15.24	14.22	15.56	15.53	NA													
Total Well Depth	25.10	25.10	25.10	25.10	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.80													
Perfluorooctanoic acid (PFHpA)	0.2	0.54	0.032	0.097	0.0032	0.0012	0.00086 U	0.0104 U	0.0053	0.0046	0.0065	0.0083	0.025	0.044	0.02	0.15	0.0074 U	0.0053	0.0044	0.014	0.0018 U	0.34	0.0074 U	0.23	0.39	0.0051	0.077	0.28	0.021	0.005	0.021	0.11	0.14	0.11	0.00096	0.0011 U													
Perfluorohexanesulfonic acid (PFHxS)	0.18	0.22	0.021	0.036	0.019	0.0091	0.0052	0.0078	0.057	0.018	0.031	0.05	0.0056 U	0.088	0.01	0.642	0.0056 U	0.0021	0.011	0.0015 U	0.00088 U	0.0191	0.0056 U	0.005	0.012 U	0.00037 U	0.0056 U	0.0031	0.02	0.01	0.0046	0.055	0.083	0.064	0.0064	0.0073													
Perfluorononanoic acid (PFNA)	0.16	0.082	0.065	0.033	<0.002	0.00078	0.00048 U	0.00046 U	0.0075	0.007	0.0063 U	0.00075 U	0.00084	0.028	0.035 U	0.015	0.0087 U	0.0087 U	0.0037 U	0.0046 U	0.00087 U	0.0097 U	0.00037 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U	0.00087 U													
Perfluorooctanoic acid (PFOA)	0.35	0.23	0.05	0.063	0.0061	0.0018	0.0014 U	0.0016 U	0.0047	0.0028	0.0043	0.0053	0.026	0.061	0.0091	0.053	0.0033 U	0.0047	0.027	0.00095 U	0.00094 U	0.075	0.0033 U	0.02	0.052	0.00074 U	0.0050 U	0.002	0.014	0.004	0.004	0.062	0.078	0.13	0.0013	0.0018 U													
Perfluorooctane sulfonate (PFOS)	0.066	0.04	0.028	0.02	0.014	0.014																																											

Table 3 - 1,4 Dioxane Groundwater Results ug/L

Sample Location	North Ramp																	Airport Road/Iyannough Road Area								ARFF Building			
Sample ID	HW-1	HW-1	HW-5	HW-12	OW-6	OW-6	HW-4M	HW-4D	HW-204	HW-29	HW-207S	HW-207D	HW-207D	HW-19D	HW-19D	HW-X(s)	HW-X(m)	HW-A(D)	HW-A(D)	HW-B(D)	HW-N	HW-O	HW-U(d)	HW-V(m)	HW-L(s)	HW-L(m)	HW-L(d)	HW-L(d)	
Sample Date	5/7/2015	8/5/2019	5/7/2015	5/7/2015	5/7/2015	9/27/2019	4/5/2017	4/5/2017	9/27/2019	9/27/2019	9/27/2019	4/5/2017	9/27/2019	4/5/2017	9/27/2019	9/10/2021	9/10/2021	4/5/2017	8/5/2019	4/5/2017	8/5/2019	8/5/2019	10/2/2020	10/2/2020	10/7/2020	10/7/2020	7/2/2019	5/13/2020	
1,4-Dioxane	<0.152	<0.25	<0.150	<0.150	<0.150	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.19	<0.22	<0.25	<0.25	<0.25	<0.25	<0.25	0.73	0.8	<0.2	<0.2	0.727	0.75	
Sample Location	Maher Well Field																Deployment Area												
Sample ID	OW-9M	OW-9D	OW-9D	OW-9D	OW-9DD	OW-9DD	OW-9DD	OW-18M	OW-18D	OW-18D	OW-18D	OW-19M	OW-19D	OW-19D	OW-19D	HW-E	HW-J												
Sample Date	5/28/2015	5/28/2015	12/3/2018	5/5/2020	5/28/2015	4/11/2017	12/3/2018	4/11/2017	4/11/2017	12/7/2018	5/13/2020	4/11/2017	4/11/2017	12/7/2018	5/13/2020	9/10/2021	9/10/2021												
1,4-Dioxane	<0.141	<0.141	<0.25	<0.19	0.926	0.838	0.732	<0.25	0.552	<0.25	0.35	<0.25	0.800	<0.25	0.3	<0.20	<0.20												

Notes:
Results in ug/L, micrograms per liter.
< = Not detected by the laboratory above the reporting limit. Reporting limit shown.
Bold results above Method 1 GW-1 standard (0.3 ug/L).
The Method 1 GW-2 standard for 1,4-dioxane is 6,000 ug/l.
The Method 1 GW-3 standard for 1,4-dioxane is 50,000 ug/l.

Table 4. ARFF Concentrate Analytical Results ug/L

Sample ID	Foam Mix
Sample Date	12/9/2016
Perfluoroheptanoic acid (PFHpA)	3.4 J
Perfluorohexanesulfonic acid (PFHxS)	2.1 J
Perfluorononanoic acid (PFNA)	93
Perfluorooctanoic acid (PFOA)	19
Perfluorooctane sulfonate (PFOS)	5 U
Perfluorodecanoic Acid (PFDA)	2.8 J
6:2 FTS	33
Total PFAS	222.5
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	120.3

Notes:

1. U = Not detected by the laboratory above the Method Detection Limit. Method Detection Limit shown.
2. Results in ug/L, micrograms per liter.
3. Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U).
4. Sample is AFFF concentrate.
5. J = Estimated concentration between the Method Detection Limit and the Laboratory Reporting Limit.

Table 5. SPLP Results ug/L

Sample ID	DL4 4'	DL5 2'	DL8 (4')	DL14(0-1')	Stockpile West	Stockpile East	ARFF Rubber Roof	ARFF Asphalt Roof
Sample Date	9/26/2017	9/26/2017	9/26/2017	9/26/2017	10/10/2017	10/10/2017	11/17/2020	11/17/2020
Perfluoroheptanoic acid (PFHpA)	0.011 U	0.011 U	0.065 J	0.17	0.011 U	0.011 U	0.00279	0.0002 U
Perfluorohexanesulfonic acid (PFHxS)	0.0072 U	0.0072 U	0.036 U	0.01 J	0.0072 U	0.0072 U	0.00034 U	0.00036 U
Perfluorononanoic acid (PFNA)	0.16	0.0032 U	0.052 J	0.37	0.0032 U	0.0032 U	0.00068 J	0.00028 U
Perfluorooctanoic acid (PFOA)	0.012 J	0.042	0.6	0.87	0.0037 U	0.0037 U	0.0073	0.00021 U
Perfluorooctane sulfonate (PFOS)	0.013 J	0.0072 U	0.036 U	0.19	0.0072 U	0.0072 U	0.00045 U	0.00202
Perfluorodecanoic Acid (PFDA)	0.0052 U	0.0052 U	0.026 U	0.34	0.0052 U	0.0052 U	0.000364 J	0.000271 U
6:2 FTS	0.067	0.0072 U	25	7.13	0.034 J	0.024 J	0.0154 J	0.0017 J
Total PFAS	0.195	0.042	26.25	20.195	0.034	0.024	0.072723	0.07957
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.185	0.042	0.717	1.95	0.011 U	0.011 U	0.011133	0.00202

Notes:

1. U = Not detected by the laboratory above the Method Detection Limit. Method Detection Limit shown.
2. Results in ug/L, micrograms per liter.
3. Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U).

Table 6: Background PFAS Levels in Soil and Soil Stock Pile Samples

Background Sample Locations																									
Sample ID	Method 1 Standard		Stockpile West	Stockpile East	Loam Pile	BG-1 0-1'	BG-2 0-1'	BG-3 0-1'	BG-4 0-1'	BG-5 0-1'	BG-6 0-1'	BG-7 0-1'	BG-8 0-1'	BG-9 0-1'	BG-10 0-1'	BG-11 0-1'	BG-12 0-1'	BG-13 0-1'	BG-14 0-1'	BG-15 0-1'	BG-16 0-1'	BG-17 0-1'	BG-18 0-1'	BG-19 0-1'	BG-20 0-1'
Sample Date	S-1/GW-1	S-1/GW-3	10/10/2017	10/10/2017	10/10/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017
Sample Location			On-Airport	On-Airport	On-Airport	Off-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport
Perfluoroheptanoic acid (PFHpA)	0.5	300	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.18 J	0.17 U	0.18 J	0.17 U	0.17 U	0.23 J	0.17 U	0.17 U	0.19 U	0.19 U	0.19 U	0.19 U	0.44 J	0.19 U	0.19 U	0.35 J	0.19 U	0.46 J
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.24 U	0.39 J	0.24 U	0.24 U	0.57 J	0.47 J	0.24 U	0.49 J	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.72	300	0.26 U	0.26 U	0.26 U	0.58 J	0.26 U	0.26 U	0.16 U	0.47 J	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.75 J	0.67 J	0.33 J	0.25 U	0.46 J	0.37 J	0.36 J	0.5 J	0.25 U	0.86 J
Perfluorononanoic acid (PFNA)	0.32	300	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.22 U	0.29 J	0.22 U	0.22 U	0.53 J	0.22	0.67 J	0.41 J	0.22 U	0.22 U
Perfluorooctane sulfonate (PFOS)	2	300	0.38 J	0.39 J	0.81 J	0.21 U	0.7 J	0.38 J	2.3	0.41 J	0.32 J	0.33 J	0.31 J	1.3	0.62 J	0.41 J	0.76 J	0.99	0.26 U	3.1	2	0.36 J	2.3	0.41 J	0.44 J
Perfluorodecanoic Acid (PFDA)	0.3	300	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.28 U	0.28 U	0.36 J	0.28 U	0.31 J	0.41 J	0.28 U	0.41 J	0.28 U	0.28 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																									
Total PFAS	NA	NA	1.78	0.91	0.81	1.47	0.7	0.56	3.21	1.31	0.32	0.3	0.84	1.3	0.62	1.16	2.73	1.68	0	6.79	3.77	5.09	5.45	0.41	2.43
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	0.38	0.39	0.81	0.58	0.7	0.56	2.3	1.06	0.32	0.33	0.54	1.3	0.62	1.16	2.11	1.68	0	5.41	3.47	1.39	4.46	0.41	1.76

Notes:

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/kg, micrograms per kilogram.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Bold results above the proposed Method 1 S-1/GW-1 standard.

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Sum of six includes estimated values and does not include non-detects (U or <).

Table 7. Surface Water Results for PFAS ug/L

	Surface Water		
Sample ID	Kmart	LP-1	UGP-1
Sample Date	6/20/2017	7/11/19	7/11/19
Perfluoroheptanoic acid (PFHpA)	0.0033 U	<0.01	<0.02
Perfluorohexanesulfonic acid (PFHxS)	0.0034 U	<0.01	<0.02
Perfluorononanoic acid (PFNA)	0.0043 J	<0.01	<0.02
Perfluorooctanoic acid (PFOA)	0.0026 U	<0.01	<0.02
Perfluorooctane sulfonate (PFOS)	0.0046 U	<0.01	<0.02
Perfluorodecanoic Acid (PFDA)	0.0040 U	<0.01	<0.02
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six			
Total PFAS	0.0174	0.018	0.047
Sum of Six (PFHpA, PFHxS, PFOA, PFOS, PFNA, and PFDA)	0.0043	<0.01	<0.02

Notes:

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/L, micrograms per liter.

U= Not detected by the laboratory above the method detection limit. Method detection limit shown.

Sum of six includes estimated values and does not include non-detects (U or <).

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Currently MassDEP has not issued a surface water standard for PFAS.

The Method 1 GW-1 Standard for the Sum of Six is 0.02 ug/l.

The Method 1 GW-3 Standard for the individual analytes in the Sum of Six range from 500 to 40,000 ug/l.

Table 8: Ratio of Stable Isotopes Oxygen-18 and Hydrogen-2 Laboratory Results

Sample Date	Lab Sample ID	HW Sample ID	Stable Isotope Oxygen-18			Stable Isotope Hydrogen-2		
			δ18O (V-SMOW)	Atm %	Expected Values	δ18O (V-SMOW)	Atm %	Expected Values
11/7/2018	1811299-2	HW-I	-6.92	0.20	-	-40.41	0.01494	-
			-6.77	0.20	-	-40.17	0.01495	-
	1811299-4	HW-E	-6.79	0.20	-	-38.56	0.01497	-
			-6.85	0.20	-	-38.87	0.01497	-
	1811299-5	HW-F	-6.9	0.20	-	-38.28	0.01498	-
			-6.88	0.20	-	-38.15	0.01498	-
	1811299-7	SW-2	-2.67	0.20	-	-18.65	0.01528	-
			-2.61	0.20	-	-20.42	0.01526	-
						-23.04	0.01521	-
12/3/2018	1812198-1	HW-G(S)	-6.74	0.20	-	-38.19	0.01498	-
			-6.93	0.20	-	-37.87	0.01498	-
	1812198-2	HW-G(M)	-7.53	0.20	-	-44.34	0.01498	-
			-7.57	0.20	-	-44.39	0.01498	-
	1812198-3	HW-G(D)	-7.18	0.20	-	-44.15	0.01489	-
			-7.45	0.20	-	-44.56	0.01488	-
	1812198-4	OW-9S	-7.29	0.20	-	-41.86	0.01492	-
			-7.41	0.20	-	-42.94	0.0149	-
	1812198-5	OW-9D	-7.76	0.20	-	-47.91	0.01483	-
			-7.71	0.20	-	-46.82	0.01484	-
					-	-47.20	0.01484	-
			1812198-6	OW-9DD	-7.52	0.20	-	-45.58
	-7.57	0.20			-	-45.48	0.01487	-
	1812198-7	OW-9M	-7.13	0.20	-	-41.44	0.01493	-
			-7.24	0.20	-	-43.40	0.0149	-
-7.58						0.20	-	-49.29
12/7/2018	1812232-1	OW-18S	-7.54	0.20	-	-49.66	0.0148	-
			-6.95	0.20	-	-42.64	0.01491	-
	1812232-2	OW-18M	-6.89	0.20	-	-42.57	0.01491	-
			-7.28	0.20	-	-44.76	0.01488	*
	1812232-3	OW-18D	-7.36	0.20	-	-41.61	0.01493	*
			IAEA OH-14	-	-5.64	0.20	-5.6	-37.45
QA/QC	IAEA OH-15	-	-9.59	0.20	-9.41	-77.89	0.01436	-78
	IAEA OH-16	-	-15.72	0.20	-15.41	-	-	-113.8
	Antarc IC	-	-29.83	0.19	-30	-	-	-239.69

Table 9. Fire Truck Spray Water PFAS Results ug/L

Sample ID	Fire Truck Spray Water Spray											
	Hose		Roof		Bumper		Officer Side Handline		Driver side-Rear		Officer side-Rear	
Sample Date	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019
Perfluoroheptanoic acid (PFHpA)	0.073	<0.002	0.0045	<0.002	0.0039	<0.002	0.027	<0.002	0.0055	<0.002	0.081	0.0021
Perfluorohexanesulfonic acid (PFHxS)	0.0059	<0.002	0.0033	<0.002	0.0039	<0.002	0.004	<0.002	0.0048	<0.002	0.0043	<0.002
Perfluorononanoic acid (PFNA)	0.011	<0.002	0.0026	<0.002	0.0031	<0.002	0.013	<0.002	0.003	<0.002	0.016	<0.002
Perfluorooctanoic acid (PFOA)	0.088	0.0062	0.0087	<0.002	0.01	<0.002	0.039	<0.002	0.011	<0.002	0.076	0.0041
Perfluorooctane sulfonate (PFOS)	0.009	0.0021	0.0068	<0.002	0.006	<0.002	0.0087	<0.002	0.0093	<0.002	0.0086	<0.002
Perfluorodecanoic Acid (PFDA)	0.014	<0.002	0.004	<0.002	0.0045	<0.002	0.032	<0.002	0.0049	<0.002	0.032	<0.002
Total PFAS	5.7017	0.3391	0.9195	0.0205	0.7817	0.0167	4.1098	0.0481	0.8302	0.0087	5.4701	0.086
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.2009	0.0083	0.0299	<0.002	0.0314	<0.002	0.1237	<0.002	0.0385	<0.002	0.2179	0.0041

Notes:

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

Results in ug/L, micrograms per liter.

Bold results above proposed MassDEP GW-1 standard (0.02 ug/L)

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Table 10. Pre and Post Cap Groundwater Results for PFAS Compounds in Deployment Area (ug/L)

Sample Location	Deployment Area																				
Sample ID	HW-E			HW-F			HW-J			HW-I (s)			HW-I (m)			HW-I (d)			HW-R(s)		
Sample Type	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap
Sample Date	5/5/2020	3/17/2021	9/8/2021	5/5/2020	3/17/2021	9/8/2021	11/7/2018	3/17/2021	9/10/2021	5/8/2020	3/17/2021	9/8/2021	5/8/2020	3/17/2021	9/8/2021	5/8/2020	3/17/2021	9/11/2021	10/1/2020	3/17/2021	9/8/2021
Depth to Groundwater	16.16	23.35	25.02	16.82	20.01	21.72	19.18	19.34	20.60	15.39	18.42	19.94	15.61	18.66	20.17	15.49	18.52	20.04	18.33	17.37	19.00
Groundwater Elevation	22.29	15.10	13.43	19.50	16.31	14.60	17.92	17.76	16.50	20.69	17.66	16.14	20.66	17.61	16.10	20.53	17.50	15.98	17.39	18.35	16.72
Perfluoroheptanoic acid (PFHpA)	0.044	0.014	0.0018 J	0.23	0.39	0.0051	0.025	0.044	0.02	0.54	0.032	0.097	0.0012	0.00086 J	0.0014 J	0.0046	0.0065	0.0083	0.021	0.005	0.021
Perfluorohexanesulfonic acid (PFHxS)	0.011	0.0015 J	0.00088 J	0.005	0.012 U	0.00037 U	0.0056 U	0.088	0.01	0.22	0.021	0.036	0.0091	0.0052	0.0078	0.018	0.031	0.05	0.02	0.01	0.0046
Perfluorononanoic acid (PFNA)	0.0052	0.00048 U	0.00037 U	0.00081	0.0097 U	0.00037 U	0.028	0.035 J	0.015	0.082	0.065	0.033	0.00078	0.00048 U	0.00046 J	<0.002	0.00075 J	0.00084 J	0.0031	0.001 J	0.00034 U
Perfluorooctanoic acid (PFOA)	0.027	0.00095 J	0.00094 J	0.02	0.052	0.00074 U	0.026	0.061	0.0091	0.29	0.05	0.063	0.0018	0.0014 J	0.0016 J	0.0028	0.0043	0.0053	0.014	0.004	0.004
Perfluorooctane sulfonate (PFOS)	0.0037	0.00082 J	0.00064 U	0.00086	0.0076 U	0.00065 U	0.13	0.25	0.08	0.04	0.028	0.02	0.014	0.013	0.016	0.02	0.038	0.039	0.016	0.0023	0.0053
Perfluorodecanoic Acid (PFDA)	<0.002	0.00038 U	0.00052 U	<0.002	0.0076 U	0.00053 U	0.0061 U	0.0076 U	0.00050 U	<0.002	0.0038 U	0.00047 U	<0.002	0.00038 U	0.00050 U	<0.002	0.00038 U	0.00048 U	<0.002	0.00038 U	0.00049 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	0.86	0.0035	0.00039 U	1.5	4.8	0.0049	0.68	0.44	0.13	13	1.7	2.1	0.00039 U	0.0011 U	0.00037 U	0.0016	0.0011 U	0.00054 J	0.037	0.0048	0.003
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																					
Total PFAS	1.04526	0.04812	0.01342	2.65637	8.422	0.159	1.074	1.217	0.51107	15.5383	2.082	2.73304	0.03308	0.02516	0.03254	0.08985	0.15585	0.16687	0.2171	0.04878	0.2549
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.0909	0.01727	0.00362	0.25667	0.442	0.0051	0.209	0.478	0.1341	1.172	0.196	0.249	0.02688	0.02046	0.02726	0.0454	0.08055	0.10344	0.0741	0.0223	0.0349
Statistics																					
Percent Total PFAS Increase or Decrease (most recent event)	-98.72%			-94.01%			-52.41%			-82.41%			-1.63%			85.72%			17.41%		
Percent Sum of 6 Increase or Decrease (most recent event)	-96.02%			-98.01%			-35.84%			-78.75%			1.41%			127.84%			-52.90%		

Sample Location	Downgradient of Deployment Area (off-Airport)														
Sample ID	HW-S (s)			HW-S (m)			OW-19(S)			OW-19(M)			OW-19D		
Sample Type	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap
Sample Date	10/1/2020	3/18/2021	9/3/2021	10/1/2020	3/18/2021	9/3/2021	11/6/2020	3/18/2021	9/2/2021	11/6/2020	3/19/2021	9/3/2021	5/13/2020	3/19/2021	9/11/2021
Depth to Groundwater	16.88	16.29	17.30	17.01	16.35	17.37	27.38	26.27	28.47	27.57	27.15	28.65	25.64	27.52	28.90
Groundwater Elevation	14.72	15.31	14.30	14.58	15.24	14.22	NA	NA	NA	NA	NA	NA	13.42	11.54	10.16
Perfluoroheptanoic acid (PFHpA)	0.11	0.14	0.11	0.00096 J	0.0011 J	0.0012 J	0.0042	0.0044	0.0056	0.03	0.044	0.014	0.011	0.018	0.022
Perfluorohexanesulfonic acid (PFHxS)	0.055	0.083	0.064	0.0064	0.0073	0.0053	0.0031	0.0064	0.0027	0.027	0.014 J	0.015	0.12	0.026	0.028
Perfluorononanoic acid (PFNA)	0.1	0.024	0.1	<0.002	0.00057 J	0.00055 J	0.0024	0.0012 J	0.0025	0.002	0.0048 U	0.0021	0.0017	0.0029	0.00088 J
Perfluorooctanoic acid (PFOA)	0.062	0.078	0.13	0.0013 J	0.0018 J	0.0014 J	0.011	0.007	0.0066	0.011	0.0094 J	0.0037	0.023	0.0097	0.007
Perfluorooctane sulfonate (PFOS)	0.1	0.03	0.048	0.0058	0.006	0.0094	0.025	0.015	0.031	0.047	0.027	0.029	0.31	0.047	0.053
Perfluorodecanoic Acid (PFDA)	<0.002	0.00038 U	0.012 U	<0.002	0.00038 U	0.00047 U	0.0027	0.001 J	0.00048 U	<0.002	0.0038 U	0.00046 U	<0.002	0.00038 U	0.00048 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	3.7	3.1	5.2	0.0065	0.0067	0.0036	0.00039 U	0.0011 U	0.00036 U	0.00095	0.011 U	0.00035 U	0.00039 U	0.0011 U	0.00036 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six															
Total PFAS	4.8958	4.3105	6.1418	0.02471	0.03263	0.02873	0.0707	0.0634	0.07307	0.37335	0.3974	0.16133	0.5463	0.3127	0.31489
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.427	0.355	0.452	0.01446	0.02667	0.01785	0.0484	0.035	0.0484	0.117	0.0944	0.0638	0.4657	0.1036	0.11088
Statistics															
Percent Total PFAS Increase or Decrease	25.45%			16.27%			3.35%			-56.79%			-42.36%		
Percent Sum of 6 Increase or Decrease	5.85%			23.44%			0.00%			-45.47%			-76.19%		

Results in ug/L, micrograms per liter.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown

Bold results above Method 1 GW-1 standard (0.02 ug/L).

Sum of six includes estimated values and does not include non-detects (U or <)

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <) The Method

1 GW-3 Standard for the individual analytes in the Sum of Six ranges from 500 to 40,000 ug/l

Percent increase or decrease is calculated using the most recent post cap sampling event as follows: [(Post Cap- Pre Cap)/(Pre Cap)]*100

Table 11. Pre and Post Cap Groundwater Results for PFAS Compounds in ARFF/SRE Area (ug/L)

Sample Location	ARFF/SRE Area					
	HW-P (s)			HW-P (m)		
Sample ID	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap
Sample Date	10/1/2020	3/18/2021	9/8/2021	10/1/2020	3/18/2021	9/8/2021
Depth to Groundwater	22.69	22.09	23.54	22.80	22.20	23.67
Groundwater Elevation	17.82	18.42	16.97	17.84	18.44	16.97
Perfluoroheptanoic acid (PFHpA)	0.026	0.0067	0.004	0.003	0.017	0.016
Perfluorohexanesulfonic acid (PFHxS)	0.0018 J	0.00074 J	0.00056 J	0.00085	0.0015 J	0.0013 J
Perfluorononanoic acid (PFNA)	0.0061	0.002	0.0013 J	0.0011 J	0.006	0.0099
Perfluorooctanoic acid (PFOA)	0.0084	0.0042	0.0017 J	0.0018 J	0.0096	0.01
Perfluorooctane sulfonate (PFOS)	0.00097	0.00049 J	0.00054 U	0.0011 J	0.0035	0.003
Perfluorodecanoic Acid (PFDA)	0.00085	0.0004 J	0.00048 U	<0.002	0.00038 U	0.00048 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	0.011	0.0034	0.0014 J	0.00092	0.0011 U	0.00036 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six						
Total PFAS	0.2478	0.06294	0.05055	0.02967	0.17311	0.15362
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.04412	0.01453	0.00756	0.00785	0.0376	0.0402
Statistics						
Percent Total PFAS Increase or Decrease	-79.60%			417.76%		
Percent Sum of 6 Increase or Decrease	-82.86%			412.10%		

Sample Location	Downgradient of Deployment Area (on and off-Airport)																							
	HW-302			HW-3			HW-2			HW-K			HW-300			RB-1 (s)			RB-1 (m)					
Sample ID	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap	Pre-Cap	Post-Cap	Post-Cap
Sample Date	12/3/2018	3/17/2021	9/1/2021	5/5/2020	3/17/2021	9/1/2021	5/5/2020	3/17/2021	9/1/2021	5/21/2020	3/18/2021	9/2/2021	7/1/2016	3/17/2021	9/2/2021	11/5/2020	3/18/2021	9/5/2021	11/5/2020	3/18/2021	9/5/2021	11/5/2020	3/18/2021	9/5/2021
Depth to Groundwater	22.65	24.04	26.15	23.64	26.19	28.35	25.33	22.85	30.20	20.56	22.87	24.24	22.52	22.86	23.02	17.87	16.91	18.64	17.79	16.85	18.57			
Groundwater Elevation	18.52	17.13	15.02	15.10	12.55	10.39	15.08	17.56	10.21	17.14	14.83	13.46	13.57	13.23	13.07	NA	NA	NA	NA	NA	NA			
Perfluoroheptanoic acid (PFHpA)	0.015 J	0.0066	0.0062	0.1	0.084	0.035	0.035	0.02	0.046	0.0028	0.0044	0.0086	0.0096	0.0028	0.0029	0.0042	0.0054	0.0077	0.011	0.013 J	0.0073			
Perfluorohexanesulfonic acid (PFHxS)	0.016 J	0.0022	0.004	0.0087	0.0064 J	0.0057 J	0.0066	0.0023	0.0056 J	0.001	0.00066 J	0.0015 J	0.012	0.0099	0.00066 J	0.0084	0.03	0.0051	0.01	0.017 J	0.0099			
Perfluorononanoic acid (PFNA)	0.0097 J	0.0066	0.005	0.021	0.019 J	0.014 J	0.016	0.01	0.004 J	0.0012	0.0037	0.003	<0.002	0.00099 J	0.0028	0.0047	0.0025	0.0026	0.0068	0.0072 J	0.0044			
Perfluorooctanoic acid (PFOA)	0.03	0.005	0.0065	0.054	0.064	0.016 J	0.039	0.017	0.012	0.0019	0.0036	0.0038	0.017	0.0044	0.0044	0.007	0.0087	0.0093	0.013	0.013 J	0.012			
Perfluorooctane sulfonate (PFOS)	0.031	0.0041	0.015	0.1	0.056	0.044	0.053	0.021	0.026	0.0016	0.0015 J	0.0019	0.0052	0.015	0.017	0.038	0.04	0.01	0.049	0.075	0.055			
Perfluorodecanoic Acid (PFDA)	0.0061 U	0.00086 J	0.001 J	0.0014	0.0038 U	0.0052 U	<0.002	0.0014 J	0.0025 U	<0.002	0.00038 U	0.00046 U	NA	0.00038 U	0.0006 J	<0.002	0.00038 U	0.00045 U	0.00075 J	0.0038 U	0.0033			
6:2 Fluorotelomer sulfonate (6:2 FTS)	0.13	0.012	0.0062	0.13	0.47	0.2	0.15	0.064	0.071	0.00039 U	0.0011 U	0.00034 U	NA	0.0011 U	0.00034 U	0.00039 U	0.0011 U	0.00034 U	0.038	0.055	0.013			
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																								
Total PFAS	0.3427	0.08304	0.09793	0.96981	1.1394	0.6867	0.42678	0.24854	0.4136	0.0275	0.04486	0.09217	0.0438	0.05509	0.03812	0.08008	0.1175	0.06755	0.2015	0.2642	0.1561			
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.1017	0.02536	0.0377	0.2851	0.2294	0.1147	0.1496	0.0717	0.0936	0.0085	0.0138	0.0188	0.0438	0.03309	0.02832	0.0623	0.0866	0.0347	0.09055	0.1252	0.0919			
Statistics																								
Percent Total PFAS Increase or Decrease	-71.42%			-29.19%			-3.09%			235.16%			-12.97%			-15.65%			-22.53%					
Percent Sum of 6 Increase or Decrease	-62.93%			-59.77%			-37.43%			121.18%			-35.34%			-44.30%			1.49%					

Results in ug/L, micrograms per liter.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown

Bold results above Method 1 GW-3 standard (0.02 ug/L).

Sum of six includes estimated values and does not include non-detects (U or <)

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <)

Method 1 GW-3 Standard for the individual analytes in the Sum of Six ranges from 500 to 40,000 ug/l

Percent increase or decrease is calculated using the most recent post cap sampling event as follows: [(Post Cap - Pre Cap)/ Pre Cap]*100

Table 2: Total Organic Carbon Levels (mg/kg)

Total Organic Carbon Concentration																	
Sample ID	HW-W dd 3-5 ft	HW-W dd 8-10 ft	HW-W dd 18-20 ft	HW-W dd 23-25 ft	HW-W dd 28-30 ft	HW-W dd 33-35 ft	HW-W dd 38-40 ft	HW-W dd 43-45 ft	HW-W dd 48-50 ft	HW-W dd 58-60 ft	HW-W dd 63-65 ft	S1 0-2ft	S1 2-4ft	S1 4-6ft	S2 0-2ft	S2 2-4ft	S2 4-6ft
Sample Date	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021
Sample Depth (ft below grade)	3-5	8-10	18-20	23-25	28-30	33-35	38-40	43-45	48-50	58-60	63-65	0-2	2-4	4-6	0-2	2-4	4-6
Sample Location	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Deployment Area	Deployment Area	Deployment Area	Deployment Area	Deployment Area	Deployment Area
Total Organic Carbon	94.8 U	94.3 U	96.5 U	93.9 U	95.7 U	93.5 U	96.9 U	95.7 U	95.7 U	95.7 U	95.7 U	28,900	1,150	180	1,550	95.1 U	3,500

Notes:
Results in mg/kg, milligrams per kilogram.
U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

APPENDIX A

Laboratory Analysis Report

April 19, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21C1176

Enclosed are results of analyses for samples received by the laboratory on March 23, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Raymond J. McCarthy
Project Manager

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

Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 4/19/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21C1176

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-R(S)	21C1176-01	Ground Water		SOP-454 PFAS	
HW-J	21C1176-02	Ground Water		SOP-454 PFAS	
HW-I (S)	21C1176-03	Ground Water		SOP-454 PFAS	
HW-I (M)	21C1176-04	Ground Water		SOP-454 PFAS	
HW-I (D)	21C1176-05	Ground Water		SOP-454 PFAS	
HW-E	21C1176-06	Ground Water		SOP-454 PFAS	
HW-F	21C1176-07	Ground Water		SOP-454 PFAS	
HW-302	21C1176-08	Ground Water		SOP-454 PFAS	
HW-2	21C1176-09	Ground Water		SOP-454 PFAS	
HW-3	21C1176-10	Ground Water		SOP-454 PFAS	
HW-300	21C1176-11	Ground Water		SOP-454 PFAS	
HW-S (S)	21C1176-12	Ground Water		SOP-454 PFAS	
HW-S (M)	21C1176-13	Ground Water		SOP-454 PFAS	
HW-P (S)	21C1176-14	Ground Water		SOP-454 PFAS	
HW-P (M)	21C1176-15	Ground Water		SOP-454 PFAS	
RB-1(S)	21C1176-16	Ground Water		SOP-454 PFAS	
RB-1 (M)	21C1176-17	Ground Water		SOP-454 PFAS	
HW-K	21C1176-18	Ground Water		SOP-454 PFAS	
OW-19 (S)	21C1176-19	Ground Water		SOP-454 PFAS	
OW-19(M)	21C1176-20	Ground Water		SOP-454 PFAS	
OW-19(D)	21C1176-21	Ground Water		SOP-454 PFAS	

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

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:**

PF-02A

Surrogate recovery is outside of control limits. Re-analysis yielded similar surrogate non-conformance.

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

21C1176-14RE1[HW-P (S)]

d5-NEtFOSAA

21C1176-04RE1[HW-I (M)], 21C1176-12RE1[HW-S (S)], 21C1176-14RE1[HW-P (S)], 21C1176-17RE1[RB-1 (M)]

M2PFTA

21C1176-04RE1[HW-I (M)], 21C1176-05RE1[HW-I (D)], 21C1176-06RE1[HW-E], 21C1176-07RE1[HW-F], 21C1176-08RE1[HW-302], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)], 21C1176-19RE1[OW-19 (S)], 21C1176-20RE1[OW-19(M)], B279944-BLK1

M7PFUnA

21C1176-04RE1[HW-I (M)], 21C1176-12RE1[HW-S (S)], 21C1176-14RE1[HW-P (S)], 21C1176-17RE1[RB-1 (M)]

M8FOSA

21C1176-04RE1[HW-I (M)], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)]

MPFDoA

21C1176-04RE1[HW-I (M)], 21C1176-05RE1[HW-I (D)], 21C1176-08RE1[HW-302], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)], 21C1176-19RE1[OW-19 (S)]

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-R(S)

Sampled: 3/17/2021 11:55

Sample ID: 21C1176-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.1	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorobutanesulfonic acid (PFBS)	0.85	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoropentanoic acid (PFPeA)	10	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorohexanoic acid (PFHxA)	6.1	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
N-EtFOSA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
N-MeFOSA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorohexanesulfonic acid (PFHxS)	10	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4.8	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.63	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroheptanoic acid (PFHpA)	5.0	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanoic acid (PFOA)	4.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanesulfonic acid (PFOS)	2.3	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorononanoic acid (PFNA)	1.0	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	75.2	50-150	
M2-4:2FTS	128	50-150	
M2PFTA	66.4	50-150	
M2-8:2FTS	80.0	50-150	
MPFBA	90.0	50-150	
M3HFPO-DA	83.1	50-150	
M6PFDA	87.2	50-150	
M3PFBS	79.4	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-R(S)

Sampled: 3/17/2021 11:55

Sample ID: 21C1176-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		83.0		50-150				4/17/21	1:05	
M2-6:2FTS		87.5		50-150				4/17/21	1:05	
M5PFPeA		87.0		50-150				4/17/21	1:05	
M5PFHxA		81.6		50-150				4/17/21	1:05	
M3PFHxS		84.7		50-150				4/17/21	1:05	
M4PFHpA		76.6		50-150				4/17/21	1:05	
M8PFOA		91.4		50-150				4/17/21	1:05	
M8PFOS		86.8		50-150				4/17/21	1:05	
M9PFNA		86.5		50-150				4/17/21	1:05	
MPFDoA		74.0		50-150				4/17/21	1:05	
d5-NEtFOSAA		75.6		50-150				4/17/21	1:05	
d3-NMeFOSAA		71.2		50-150				4/17/21	1:05	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Sampled: 3/17/2021 12:50

Field Sample #: HW-J

Sample ID: 21C1176-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	59	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	40	6.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoropentanoic acid (PFPeA)	150	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorohexanoic acid (PFHxA)	75	40	15	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
11Cl-PF3OUdS (F53B Major)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
9Cl-PF3ONS (F53B Minor)	ND	40	7.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	40	32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	40	29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorodecanoic acid (PFDA)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorododecanoic acid (PFDoA)	ND	40	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	40	7.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	40	26	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
N-EtFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
N-MeFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorotetradecanoic acid (PFTA)	ND	40	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	40	23	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	40	21	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanesulfonamide (FOSA)	ND	40	8.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorononanesulfonic acid (PFNS)	ND	40	18	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	15	40	14	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorohexanesulfonic acid (PFHxS)	88	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	40	7.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	440	40	22	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	40	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroundecanoic acid (PFUnA)	ND	40	9.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroheptanoic acid (PFHpA)	44	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanoic acid (PFOA)	61	40	7.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanesulfonic acid (PFOS)	250	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorononanoic acid (PFNA)	35	40	9.7	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	92.7	50-150	
M2-4:2FTS	78.3	50-150	
M2PFTA	88.2	50-150	
M2-8:2FTS	79.1	50-150	
MPFBA	100	50-150	
M3HFPO-DA	93.2	50-150	
M6PFDA	101	50-150	
M3PFBS	96.2	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-J

Sampled: 3/17/2021 12:50

Sample ID: 21C1176-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	98.4		50-150				4/17/21 1:35			
M2-6:2FTS	71.5		50-150				4/17/21 1:35			
M5PFPeA	105		50-150				4/17/21 1:35			
M5PFHxA	94.3		50-150				4/17/21 1:35			
M3PFHxS	104		50-150				4/17/21 1:35			
M4PFHpA	97.9		50-150				4/17/21 1:35			
M8PFOA	104		50-150				4/17/21 1:35			
M8PFOS	104		50-150				4/17/21 1:35			
M9PFNA	98.8		50-150				4/17/21 1:35			
MPFDoA	90.4		50-150				4/17/21 1:35			
d5-NEtFOSAA	88.6		50-150				4/17/21 1:35			
d3-NMeFOSAA	83.9		50-150				4/17/21 1:35			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (S)

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	32	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoropentanoic acid (PFPeA)	98	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorohexanoic acid (PFHxA)	56	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorohexanesulfonic acid (PFHxS)	21	20	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1700	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroheptanoic acid (PFHpA)	32	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanoic acid (PFOA)	50	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanesulfonic acid (PFOS)	28	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorononanoic acid (PFNA)	65	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.0	50-150	4/17/21 2:04
M2-4:2FTS	76.0	50-150	4/17/21 2:04
M2PFTA	79.7	50-150	4/17/21 2:04
M2-8:2FTS	79.1	50-150	4/17/21 2:04
MPFBA	97.7	50-150	4/17/21 2:04
M3HFPO-DA	95.2	50-150	4/17/21 2:04
M6PFDA	97.5	50-150	4/17/21 2:04
M3PFBS	97.4	50-150	4/17/21 2:04

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (S)

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	91.9		50-150				4/17/21 2:04			
M2-6:2FTS	79.3		50-150				4/17/21 2:04			
M5PFPeA	101		50-150				4/17/21 2:04			
M5PFHxA	91.2		50-150				4/17/21 2:04			
M3PFHxS	99.0		50-150				4/17/21 2:04			
M4PFHpA	97.6		50-150				4/17/21 2:04			
M8PFOA	100		50-150				4/17/21 2:04			
M8PFOS	101		50-150				4/17/21 2:04			
M9PFNA	94.0		50-150				4/17/21 2:04			
MPFDoA	84.5		50-150				4/17/21 2:04			
d5-NEtFOSAA	85.0		50-150				4/17/21 2:04			
d3-NMeFOSAA	80.4		50-150				4/17/21 2:04			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (M)

Sampled: 3/17/2021 14:10

Sample ID: 21C1176-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	2.0	0.57	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoropentanoic acid (PFPeA)	1.9	2.0	0.66	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorohexanoic acid (PFHxA)	1.8	2.0	0.75	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorohexanesulfonic acid (PFHxS)	5.2	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroheptanoic acid (PFHpA)	0.86	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanoic acid (PFOA)	1.4	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanesulfonic acid (PFOS)	13	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorononanoic acid (PFNA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	16.9 *	50-150	PF-02A
M2-4:2FTS	90.7	50-150	
M2PFTA	0.898 *	50-150	PF-02A
M2-8:2FTS	71.0	50-150	
MPFBA	95.2	50-150	
M3HFPO-DA	92.6	50-150	
M6PFDA	71.9	50-150	
M3PFBS	110	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (M)

Sampled: 3/17/2021 14:10

Sample ID: 21C1176-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	35.5	*		50-150		PF-02A		4/17/21	2:34	
M2-6:2FTS	77.8			50-150				4/17/21	2:34	
M5PFPeA	93.6			50-150				4/17/21	2:34	
M5PFHxA	90.1			50-150				4/17/21	2:34	
M3PFHxS	111			50-150				4/17/21	2:34	
M4PFHpA	85.7			50-150				4/17/21	2:34	
M8PFOA	96.5			50-150				4/17/21	2:34	
M8PFOS	97.6			50-150				4/17/21	2:34	
M9PFNA	86.1			50-150				4/17/21	2:34	
MPFDoA	11.1	*		50-150		PF-02A		4/17/21	2:34	
d5-NEtFOSAA	41.6	*		50-150		PF-02A		4/17/21	2:34	
d3-NMeFOSAA	51.5			50-150				4/17/21	2:34	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (D)

Sampled: 3/17/2021 14:35

Sample ID: 21C1176-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	9.9	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorobutanesulfonic acid (PFBS)	1.7	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoropentanoic acid (PFPeA)	37	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorohexanoic acid (PFHxA)	25	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorohexanesulfonic acid (PFHxS)	31	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.7	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroheptanoic acid (PFHpA)	6.5	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanoic acid (PFOA)	4.3	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanesulfonic acid (PFOS)	38	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorononanoic acid (PFNA)	0.75	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	60.0	50-150	
M2-4:2FTS	79.0	50-150	
M2PFTA	11.9	50-150	PF-02A
M2-8:2FTS	69.4	50-150	
MPFBA	91.2	50-150	
M3HFPO-DA	93.1	50-150	
M6PFDA	84.9	50-150	
M3PFBS	93.0	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (D)

Sampled: 3/17/2021 14:35

Sample ID: 21C1176-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		67.1		50-150					4/17/21 3:04	
M2-6:2FTS		66.3		50-150					4/17/21 3:04	
M5PFPeA		91.8		50-150					4/17/21 3:04	
M5PFHxA		85.7		50-150					4/17/21 3:04	
M3PFHxS		96.5		50-150					4/17/21 3:04	
M4PFHpA		85.5		50-150					4/17/21 3:04	
M8PFOA		95.0		50-150					4/17/21 3:04	
M8PFOS		91.1		50-150					4/17/21 3:04	
M9PFNA		88.6		50-150					4/17/21 3:04	
MPFDoA		46.9	*	50-150		PF-02A			4/17/21 3:04	
d5-NEtFOSAA		63.0		50-150					4/17/21 3:04	
d3-NMeFOSAA		66.4		50-150					4/17/21 3:04	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-E

Sampled: 3/17/2021 15:10

Sample ID: 21C1176-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	5.5	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorobutanesulfonic acid (PFBS)	0.35	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoropentanoic acid (PFPeA)	16	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorohexanoic acid (PFHxA)	5.5	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.5	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.5	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroheptanoic acid (PFHpA)	14	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanoic acid (PFOA)	0.95	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanesulfonic acid (PFOS)	0.82	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorononanoic acid (PFNA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	79.8	50-150	
M2-4:2FTS	79.8	50-150	
M2PFTA	36.4	*	50-150
M2-8:2FTS	77.7	50-150	PF-02A
MPFBA	95.1	50-150	
M3HFPO-DA	92.0	50-150	
M6PFDA	94.4	50-150	
M3PFBS	92.1	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-E

Sampled: 3/17/2021 15:10

Sample ID: 21C1176-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	85.0		50-150				4/17/21 3:33			
M2-6:2FTS	72.7		50-150				4/17/21 3:33			
M5PFPeA	93.3		50-150				4/17/21 3:33			
M5PFHxA	89.8		50-150				4/17/21 3:33			
M3PFHxS	100		50-150				4/17/21 3:33			
M4PFHpA	87.4		50-150				4/17/21 3:33			
M8PFOA	101		50-150				4/17/21 3:33			
M8PFOS	95.5		50-150				4/17/21 3:33			
M9PFNA	95.5		50-150				4/17/21 3:33			
MPFDoA	73.7		50-150				4/17/21 3:33			
d5-NEtFOSAA	77.4		50-150				4/17/21 3:33			
d3-NMeFOSAA	75.6		50-150				4/17/21 3:33			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-F

Sampled: 3/17/2021 15:35

Sample ID: 21C1176-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	420	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	40	6.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoropentanoic acid (PFPeA)	1800	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorohexanoic acid (PFHxA)	960	40	15	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
11Cl-PF3OUdS (F53B Major)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
9Cl-PF3ONS (F53B Minor)	ND	40	7.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	40	32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	40	29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorodecanoic acid (PFDA)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorododecanoic acid (PFDoA)	ND	40	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	40	7.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	40	26	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
N-EtFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
N-MeFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorotetradecanoic acid (PFTA)	ND	40	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	40	23	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	40	21	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanesulfonamide (FOSA)	ND	40	8.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorononanesulfonic acid (PFNS)	ND	40	18	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	40	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorohexanesulfonic acid (PFHxS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	40	7.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4800	40	22	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	40	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroundecanoic acid (PFUnA)	ND	40	9.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroheptanoic acid (PFHpA)	390	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanoic acid (PFOA)	52	40	7.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanesulfonic acid (PFOS)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorononanoic acid (PFNA)	ND	40	9.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	69.3	50-150	
M2-4:2FTS	78.0	50-150	
M2PFTA	21.1	50-150	PF-02A
M2-8:2FTS	73.8	50-150	
MPFBA	93.8	50-150	
M3HFPO-DA	90.9	50-150	
M6PFDA	88.8	50-150	
M3PFBS	96.4	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-F

Sampled: 3/17/2021 15:35

Sample ID: 21C1176-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	76.9		50-150				4/17/21 4:03			
M2-6:2FTS	93.0		50-150				4/17/21 4:03			
M5PFPeA	96.9		50-150				4/17/21 4:03			
M5PFHxA	88.8		50-150				4/17/21 4:03			
M3PFHxS	101		50-150				4/17/21 4:03			
M4PFHpA	94.4		50-150				4/17/21 4:03			
M8PFOA	96.9		50-150				4/17/21 4:03			
M8PFOS	96.8		50-150				4/17/21 4:03			
M9PFNA	90.9		50-150				4/17/21 4:03			
MPFDoA	60.6		50-150				4/17/21 4:03			
d5-NEtFOSAA	74.7		50-150				4/17/21 4:03			
d3-NMeFOSAA	71.4		50-150				4/17/21 4:03			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-302

Sampled: 3/17/2021 16:30

Sample ID: 21C1176-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.9	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorobutanesulfonic acid (PFBS)	1.6	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoropentanoic acid (PFPeA)	18	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorohexanoic acid (PFHxA)	11	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.1	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorodecanoic acid (PFDA)	0.86	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanesulfonamide (FOSA)	0.82	2.0	0.44	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.2	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	12	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.96	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroundecanoic acid (PFUnA)	3.3	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroheptanoic acid (PFHpA)	6.6	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanoic acid (PFOA)	5.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanesulfonic acid (PFOS)	4.1	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorononanoic acid (PFNA)	6.6	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	54.2	50-150	
M2-4:2FTS	83.8	50-150	
M2PFTA	7.18	*	50-150
M2-8:2FTS	77.8	50-150	PF-02A
MPFBA	95.5	50-150	
M3HFPO-DA	95.4	50-150	
M6PFDA	88.8	50-150	
M3PFBS	101	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-302

Sampled: 3/17/2021 16:30

Sample ID: 21C1176-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		70.8		50-150					4/17/21 5:02	
M2-6:2FTS		77.8		50-150					4/17/21 5:02	
M5PFPeA		99.6		50-150					4/17/21 5:02	
M5PFHxA		90.9		50-150					4/17/21 5:02	
M3PFHxS		103		50-150					4/17/21 5:02	
M4PFHpA		84.4		50-150					4/17/21 5:02	
M8PFOA		101		50-150					4/17/21 5:02	
M8PFOS		96.2		50-150					4/17/21 5:02	
M9PFNA		93.5		50-150					4/17/21 5:02	
MPFDoA		40.9	*	50-150		PF-02A			4/17/21 5:02	
d5-NEtFOSAA		72.8		50-150					4/17/21 5:02	
d3-NMeFOSAA		70.4		50-150					4/17/21 5:02	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-2

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	14	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorobutanesulfonic acid (PFBS)	0.84	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoropentanoic acid (PFPeA)	70	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorohexanoic acid (PFHxA)	27	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorodecanoic acid (PFDA)	1.4	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	1.0	2.0	0.70	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.3	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	64	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroheptanoic acid (PFHpA)	20	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanoic acid (PFOA)	17	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanesulfonic acid (PFOS)	21	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorononanoic acid (PFNA)	10	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
M8FOSA	46.0	*	50-150	PF-02A
M2-4:2FTS	147		50-150	
M2PFTA	2.12	*	50-150	PF-02A
M2-8:2FTS	103		50-150	
MPFBA	101		50-150	
M3HFPO-DA	102		50-150	
M6PFDA	85.5		50-150	
M3PFBS	104		50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-2

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	56.2			50-150				4/17/21	5:32	
M2-6:2FTS	128			50-150				4/17/21	5:32	
M5PFPeA	105			50-150				4/17/21	5:32	
M5PFHxA	93.3			50-150				4/17/21	5:32	
M3PFHxS	110			50-150				4/17/21	5:32	
M4PFHpA	75.7			50-150				4/17/21	5:32	
M8PFOA	103			50-150				4/17/21	5:32	
M8PFOS	98.2			50-150				4/17/21	5:32	
M9PFNA	90.9			50-150				4/17/21	5:32	
MPFDoA	24.2	*		50-150		PF-02A		4/17/21	5:32	
d5-NEtFOSAA	60.4			50-150				4/17/21	5:32	
d3-NMeFOSAA	66.1			50-150				4/17/21	5:32	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-3

Sampled: 3/17/2021 15:00

Sample ID: 21C1176-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	70	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoropentanoic acid (PFPeA)	260	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorohexanoic acid (PFHxA)	110	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorohexanesulfonic acid (PFHxS)	6.4	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	470	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroheptanoic acid (PFHpA)	84	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanoic acid (PFOA)	64	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanesulfonic acid (PFOS)	56	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorononanoic acid (PFNA)	19	20	4.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.4	50-150	
M2-4:2FTS	76.7	50-150	
M2PFTA	78.4	50-150	
M2-8:2FTS	85.0	50-150	
MPFBA	95.4	50-150	
M3HFPO-DA	89.5	50-150	
M6PFDA	98.9	50-150	
M3PFBS	94.0	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-3

Sampled: 3/17/2021 15:00

Sample ID: 21C1176-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	91.4		50-150				4/17/21 6:02			
M2-6:2FTS	72.5		50-150				4/17/21 6:02			
M5PFPeA	101		50-150				4/17/21 6:02			
M5PFHxA	90.9		50-150				4/17/21 6:02			
M3PFHxS	98.1		50-150				4/17/21 6:02			
M4PFHpA	92.2		50-150				4/17/21 6:02			
M8PFOA	98.8		50-150				4/17/21 6:02			
M8PFOS	100		50-150				4/17/21 6:02			
M9PFNA	92.4		50-150				4/17/21 6:02			
MPFDoA	83.5		50-150				4/17/21 6:02			
d5-NEtFOSAA	80.8		50-150				4/17/21 6:02			
d3-NMeFOSAA	81.3		50-150				4/17/21 6:02			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-300

Sampled: 3/17/2021 16:45

Sample ID: 21C1176-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.4	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorobutanesulfonic acid (PFBS)	0.70	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoropentanoic acid (PFPeA)	11	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorohexanoic acid (PFHxA)	5.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorohexanesulfonic acid (PFHxS)	9.9	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroheptanoic acid (PFHpA)	2.8	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanoic acid (PFOA)	4.4	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanesulfonic acid (PFOS)	15	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorononanoic acid (PFNA)	0.99	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	81.0	50-150	
M2-4:2FTS	79.1	50-150	
M2PFTA	74.6	50-150	
M2-8:2FTS	85.2	50-150	
MPFBA	91.3	50-150	
M3HFPO-DA	90.9	50-150	
M6PFDA	95.2	50-150	
M3PFBS	89.8	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-300

Sampled: 3/17/2021 16:45

Sample ID: 21C1176-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	86.7		50-150				4/17/21 6:31			
M2-6:2FTS	68.8		50-150				4/17/21 6:31			
M5PFPeA	93.9		50-150				4/17/21 6:31			
M5PFHxA	83.7		50-150				4/17/21 6:31			
M3PFHxS	98.3		50-150				4/17/21 6:31			
M4PFHpA	71.5		50-150				4/17/21 6:31			
M8PFOA	94.2		50-150				4/17/21 6:31			
M8PFOS	96.1		50-150				4/17/21 6:31			
M9PFNA	87.6		50-150				4/17/21 6:31			
MPFDoA	77.6		50-150				4/17/21 6:31			
d5-NEtFOSAA	75.9		50-150				4/17/21 6:31			
d3-NMeFOSAA	75.2		50-150				4/17/21 6:31			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (S)

Sampled: 3/18/2021 10:00

Sample ID: 21C1176-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	89	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorobutanesulfonic acid (PFBS)	5.4	20	3.2	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoropentanoic acid (PFPeA)	430	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorohexanoic acid (PFHxA)	300	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorododecanoic acid (PFDoA)	11	20	2.9	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-1-butanefulfonamide (FBFA)	13	20	5.5	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorohexanesulfonic acid (PFHxS)	83	20	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3100	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoropentanesulfonic acid (PFPeS)	7.1	20	5.1	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroheptanoic acid (PFHpA)	140	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanoic acid (PFOA)	78	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanesulfonic acid (PFOS)	30	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorononanoic acid (PFNA)	24	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	19.4 *	50-150	PF-02A
M2-4:2FTS	87.5	50-150	
M2PFTA	1.30 *	50-150	PF-02A
M2-8:2FTS	72.2	50-150	
MPFBA	94.0	50-150	
M3HFPO-DA	95.7	50-150	
M6PFDA	79.9	50-150	
M3PFBS	107	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (S)

Sampled: 3/18/2021 10:00

Sample ID: 21C1176-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	47.0	*		50-150		PF-02A		4/17/21	7:01	
M2-6:2FTS	100			50-150				4/17/21	7:01	
M5PFPeA	100			50-150				4/17/21	7:01	
M5PFHxA	92.2			50-150				4/17/21	7:01	
M3PFHxS	108			50-150				4/17/21	7:01	
M4PFHpA	93.4			50-150				4/17/21	7:01	
M8PFOA	97.9			50-150				4/17/21	7:01	
M8PFOS	96.0			50-150				4/17/21	7:01	
M9PFNA	90.6			50-150				4/17/21	7:01	
MPFDoA	15.6	*		50-150		PF-02A		4/17/21	7:01	
d5-NEtFOSAA	44.8	*		50-150		PF-02A		4/17/21	7:01	
d3-NMeFOSAA	56.6			50-150				4/17/21	7:01	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (M)

Sampled: 3/18/2021 10:30

Sample ID: 21C1176-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.9	2.0	0.57	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorobutanesulfonic acid (PFBS)	0.46	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoropentanoic acid (PFPeA)	3.9	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorohexanoic acid (PFHxA)	2.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorohexanesulfonic acid (PFHxS)	7.3	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	6.7	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroheptanoic acid (PFHpA)	1.1	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanoic acid (PFOA)	1.8	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanesulfonic acid (PFOS)	6.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorononanoic acid (PFNA)	0.57	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	43.3 *	50-150	PF-02A
M2-4:2FTS	86.7	50-150	
M2PFTA	2.23 *	50-150	PF-02A
M2-8:2FTS	83.9	50-150	
MPFBA	95.3	50-150	
M3HFPO-DA	58.4	50-150	
M6PFDA	90.3	50-150	
M3PFBS	102	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (M)

Sampled: 3/18/2021 10:30

Sample ID: 21C1176-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	70.9			50-150				4/17/21	7:30	
M2-6:2FTS	73.8			50-150				4/17/21	7:30	
M5PFPeA	96.5			50-150				4/17/21	7:30	
M5PFHxA	91.3			50-150				4/17/21	7:30	
M3PFHxS	106			50-150				4/17/21	7:30	
M4PFHpA	84.8			50-150				4/17/21	7:30	
M8PFOA	98.6			50-150				4/17/21	7:30	
M8PFOS	100			50-150				4/17/21	7:30	
M9PFNA	91.1			50-150				4/17/21	7:30	
MPFDoA	37.3	*		50-150		PF-02A		4/17/21	7:30	
d5-NEtFOSAA	62.7			50-150				4/17/21	7:30	
d3-NMeFOSAA	68.2			50-150				4/17/21	7:30	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (S)

Sampled: 3/18/2021 11:35

Sample ID: 21C1176-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.2	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoropentanoic acid (PFPeA)	22	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorohexanoic acid (PFHxA)	14	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorodecanoic acid (PFDA)	0.40	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.74	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.4	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroundecanoic acid (PFUnA)	0.81	2.0	0.49	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroheptanoic acid (PFHpA)	6.7	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanoic acid (PFOA)	4.2	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanesulfonic acid (PFOS)	0.49	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorononanoic acid (PFNA)	2.0	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	12.0 *	50-150	PF-02A
M2-4:2FTS	91.0	50-150	
M2PFTA	1.30 *	50-150	PF-02A
M2-8:2FTS	75.5	50-150	
MPFBA	93.7	50-150	
M3HFPO-DA	101	50-150	
M6PFDA	77.6	50-150	
M3PFBS	105	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (S)

Sampled: 3/18/2021 11:35

Sample ID: 21C1176-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	38.4	*		50-150		PF-02A		4/17/21	8:00	
M2-6:2FTS	77.5			50-150				4/17/21	8:00	
M5PFPeA	95.7			50-150				4/17/21	8:00	
M5PFHxA	90.8			50-150				4/17/21	8:00	
M3PFHxS	105			50-150				4/17/21	8:00	
M4PFHpA	87.0			50-150				4/17/21	8:00	
M8PFOA	96.6			50-150				4/17/21	8:00	
M8PFOS	98.9			50-150				4/17/21	8:00	
M9PFNA	91.6			50-150				4/17/21	8:00	
MPFDoA	8.32	*		50-150		PF-02A		4/17/21	8:00	
d5-NEtFOSAA	36.1	*		50-150		PF-02A		4/17/21	8:00	
d3-NMeFOSAA	45.4	*		50-150		PF-02A		4/17/21	8:00	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (M)

Sampled: 3/18/2021 12:00

Sample ID: 21C1176-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	25	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorobutanesulfonic acid (PFBS)	0.51	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoropentanoic acid (PFPeA)	76	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorohexanoic acid (PFHxA)	34	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.5	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroheptanoic acid (PFHpA)	17	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanoic acid (PFOA)	9.6	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanesulfonic acid (PFOS)	3.5	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorononanoic acid (PFNA)	6.0	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	81.1	50-150	
M2-4:2FTS	75.0	50-150	
M2PFTA	68.6	50-150	
M2-8:2FTS	74.6	50-150	
MPFBA	90.3	50-150	
M3HFPO-DA	89.7	50-150	
M6PFDA	94.4	50-150	
M3PFBS	86.4	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (M)

Sampled: 3/18/2021 12:00

Sample ID: 21C1176-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		83.9		50-150				4/17/21	8:30	
M2-6:2FTS		63.2		50-150				4/17/21	8:30	
M5PFPeA		93.9		50-150				4/17/21	8:30	
M5PFHxA		83.7		50-150				4/17/21	8:30	
M3PFHxS		92.7		50-150				4/17/21	8:30	
M4PFHpA		64.4		50-150				4/17/21	8:30	
M8PFOA		93.4		50-150				4/17/21	8:30	
M8PFOS		86.4		50-150				4/17/21	8:30	
M9PFNA		89.4		50-150				4/17/21	8:30	
MPFDoA		75.2		50-150				4/17/21	8:30	
d5-NEtFOSAA		74.5		50-150				4/17/21	8:30	
d3-NMeFOSAA		74.8		50-150				4/17/21	8:30	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1(S)

Sampled: 3/18/2021 13:40

Sample ID: 21C1176-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.2	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorobutanesulfonic acid (PFBS)	2.0	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoropentanoic acid (PFPeA)	9.8	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorohexanoic acid (PFHxA)	12	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-1-butanefulfonamide (FBFA)	1.1	2.0	0.55	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorohexanesulfonic acid (PFHxS)	30	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.8	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroheptanoic acid (PFHpA)	5.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanoic acid (PFOA)	8.7	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanesulfonic acid (PFOS)	40	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorononanoic acid (PFNA)	2.5	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	41.1 *	50-150	PF-02A
M2-4:2FTS	94.5	50-150	
M2PFTA	3.75 *	50-150	PF-02A
M2-8:2FTS	80.2	50-150	
MPFBA	95.2	50-150	
M3HFPO-DA	91.7	50-150	
M6PFDA	91.1	50-150	
M3PFBS	100	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1(S)

Sampled: 3/18/2021 13:40

Sample ID: 21C1176-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	66.9		50-150				4/17/21 8:59			
M2-6:2FTS	77.8		50-150				4/17/21 8:59			
M5PFPeA	97.5		50-150				4/17/21 8:59			
M5PFHxA	92.6		50-150				4/17/21 8:59			
M3PFHxS	100		50-150				4/17/21 8:59			
M4PFHpA	71.3		50-150				4/17/21 8:59			
M8PFOA	99.3		50-150				4/17/21 8:59			
M8PFOS	96.1		50-150				4/17/21 8:59			
M9PFNA	89.9		50-150				4/17/21 8:59			
MPFD_oA	36.7	*	50-150		PF-02A		4/17/21 8:59			
d5-NEtFOSAA	64.8		50-150				4/17/21 8:59			
d3-NMeFOSAA	66.9		50-150				4/17/21 8:59			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1 (M)

Sampled: 3/18/2021 14:30

Sample ID: 21C1176-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	16	20	5.7	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoropentanoic acid (PFPeA)	44	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorohexanoic acid (PFHxA)	24	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorohexanesulfonic acid (PFHxS)	17	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	55	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroheptanoic acid (PFHpA)	13	20	6.2	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanoic acid (PFOA)	13	20	3.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanesulfonic acid (PFOS)	75	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorononanoic acid (PFNA)	7.2	20	4.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
M8FOSA	23.8	*	50-150	PF-02A
M2-4:2FTS	93.8		50-150	4/17/21 9:29
M2PFTA	0.683	*	50-150	PF-02A
M2-8:2FTS	71.6		50-150	4/17/21 9:29
MPFBA	100		50-150	4/17/21 9:29
M3HFPO-DA	104		50-150	4/17/21 9:29
M6PFDA	79.7		50-150	4/17/21 9:29
M3PFBS	114		50-150	4/17/21 9:29

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1 (M)

Sampled: 3/18/2021 14:30

Sample ID: 21C1176-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	46.0	*		50-150		PF-02A		4/17/21	9:29	
M2-6:2FTS	84.9			50-150				4/17/21	9:29	
M5PFPeA	104			50-150				4/17/21	9:29	
M5PFHxA	100			50-150				4/17/21	9:29	
M3PFHxS	123			50-150				4/17/21	9:29	
M4PFHpA	102			50-150				4/17/21	9:29	
M8PFOA	104			50-150				4/17/21	9:29	
M8PFOS	99.8			50-150				4/17/21	9:29	
M9PFNA	96.8			50-150				4/17/21	9:29	
MPFDoA	13.6	*		50-150		PF-02A		4/17/21	9:29	
d5-NEtFOSAA	48.1	*		50-150		PF-02A		4/17/21	9:29	
d3-NMeFOSAA	58.5			50-150				4/17/21	9:29	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-K

Sampled: 3/18/2021 11:00

Sample ID: 21C1176-18

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.3	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoropentanoic acid (PFPeA)	17	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorohexanoic acid (PFHxA)	7.7	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
N-EtFOSA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
N-MeFOSA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.66	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroheptanoic acid (PFHpA)	4.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanoic acid (PFOA)	3.6	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanesulfonic acid (PFOS)	1.5	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorononanoic acid (PFNA)	3.7	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	84.7	50-150	
M2-4:2FTS	86.6	50-150	
M2PFTA	80.4	50-150	
M2-8:2FTS	82.4	50-150	
MPFBA	96.3	50-150	
M3HFPO-DA	90.6	50-150	
M6PFDA	96.3	50-150	
M3PFBS	97.3	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-K

Sampled: 3/18/2021 11:00

Sample ID: 21C1176-18

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	90.5		50-150				4/17/21 10:28			
M2-6:2FTS	71.5		50-150				4/17/21 10:28			
M5PFPeA	97.9		50-150				4/17/21 10:28			
M5PFHxA	91.0		50-150				4/17/21 10:28			
M3PFHxS	101		50-150				4/17/21 10:28			
M4PFHpA	85.5		50-150				4/17/21 10:28			
M8PFOA	101		50-150				4/17/21 10:28			
M8PFOS	102		50-150				4/17/21 10:28			
M9PFNA	92.0		50-150				4/17/21 10:28			
MPFDoA	83.5		50-150				4/17/21 10:28			
d5-NEtFOSAA	80.6		50-150				4/17/21 10:28			
d3-NMeFOSAA	77.1		50-150				4/17/21 10:28			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19 (S)

Sampled: 3/18/2021 14:00

Sample ID: 21C1176-19

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.6	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorobutanesulfonic acid (PFBS)	2.9	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoropentanoic acid (PFPeA)	13	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorohexanoic acid (PFHxA)	7.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorodecanoic acid (PFDA)	1.0	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorohexanesulfonic acid (PFHxS)	6.4	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroheptanoic acid (PFHpA)	4.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanoic acid (PFOA)	7.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanesulfonic acid (PFOS)	15	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorononanoic acid (PFNA)	1.2	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	56.3	50-150	
M2-4:2FTS	103	50-150	
M2PFTA	3.50 *	50-150	PF-02A
M2-8:2FTS	79.8	50-150	
MPFBA	97.4	50-150	
M3HFPO-DA	99.4	50-150	
M6PFDA	87.5	50-150	
M3PFBS	97.1	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19 (S)

Sampled: 3/18/2021 14:00

Sample ID: 21C1176-19

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	66.6		50-150				4/17/21 10:57			
M2-6:2FTS	79.6		50-150				4/17/21 10:57			
M5PFPeA	95.7		50-150				4/17/21 10:57			
M5PFHxA	92.0		50-150				4/17/21 10:57			
M3PFHxS	105		50-150				4/17/21 10:57			
M4PFHpA	91.3		50-150				4/17/21 10:57			
M8PFOA	97.9		50-150				4/17/21 10:57			
M8PFOS	96.1		50-150				4/17/21 10:57			
M9PFNA	89.9		50-150				4/17/21 10:57			
MPFDoA	38.2		*	50-150	PF-02A		4/17/21 10:57			
d5-NEtFOSAA	65.3		50-150				4/17/21 10:57			
d3-NMeFOSAA	69.2		50-150				4/17/21 10:57			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(M)

Sampled: 3/19/2021 13:15

Sample ID: 21C1176-20

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	43	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoropentanoic acid (PFPeA)	160	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorohexanoic acid (PFHxA)	100	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorohexanesulfonic acid (PFHxS)	14	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroheptanoic acid (PFHpA)	44	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanoic acid (PFOA)	9.4	20	3.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanesulfonic acid (PFOS)	27	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorononanoic acid (PFNA)	ND	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	67.9	50-150	
M2-4:2FTS	79.8	50-150	
M2PFTA	13.8	*	50-150
M2-8:2FTS	75.3	50-150	PF-02A
MPFBA	93.9	50-150	
M3HFPO-DA	93.4	50-150	
M6PFDA	89.8	50-150	
M3PFBS	95.0	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(M)

Sampled: 3/19/2021 13:15

Sample ID: 21C1176-20

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	74.7		50-150				4/17/21 11:27			
M2-6:2FTS	72.2		50-150				4/17/21 11:27			
M5PFPeA	99.2		50-150				4/17/21 11:27			
M5PFHxA	87.9		50-150				4/17/21 11:27			
M3PFHxS	99.5		50-150				4/17/21 11:27			
M4PFHpA	89.8		50-150				4/17/21 11:27			
M8PFOA	95.2		50-150				4/17/21 11:27			
M8PFOS	95.5		50-150				4/17/21 11:27			
M9PFNA	89.0		50-150				4/17/21 11:27			
MPFDoA	56.7		50-150				4/17/21 11:27			
d5-NEtFOSAA	70.4		50-150				4/17/21 11:27			
d3-NMeFOSAA	71.6		50-150				4/17/21 11:27			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(D)

Sampled: 3/19/2021 14:30

Sample ID: 21C1176-21

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	24	2.0	0.57	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorobutanesulfonic acid (PFBS)	1.6	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoropentanoic acid (PFPeA)	110	2.0	0.66	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorohexanoic acid (PFHxA)	71	2.0	0.75	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.70	2.0	0.55	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorohexanesulfonic acid (PFHxS)	26	2.0	0.58	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.8	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroheptanoic acid (PFHpA)	18	2.0	0.62	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanoic acid (PFOA)	9.7	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanesulfonic acid (PFOS)	47	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorononanoic acid (PFNA)	2.9	2.0	0.48	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.9	50-150	
M2-4:2FTS	85.2	50-150	
M2PFTA	64.6	50-150	
M2-8:2FTS	92.3	50-150	
MPFBA	99.2	50-150	
M3HFPO-DA	92.1	50-150	
M6PFDA	98.0	50-150	
M3PFBS	98.0	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(D)

Sampled: 3/19/2021 14:30

Sample ID: 21C1176-21

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		89.6		50-150					4/16/21 16:12	
M2-6:2FTS		85.5		50-150					4/16/21 16:12	
M5PFPeA		95.7		50-150					4/16/21 16:12	
M5PFHxA		91.8		50-150					4/16/21 16:12	
M3PFHxS		108		50-150					4/16/21 16:12	
M4PFHpA		97.8		50-150					4/16/21 16:12	
M8PFOA		101		50-150					4/16/21 16:12	
M8PFOS		103		50-150					4/16/21 16:12	
M9PFNA		95.2		50-150					4/16/21 16:12	
MPFDoA		82.2		50-150					4/16/21 16:12	
d5-NEtFOSAA		83.4		50-150					4/16/21 16:12	
d3-NMeFOSAA		83.1		50-150					4/16/21 16:12	

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Sample Extraction Data**Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1176-01RE1 [HW-R(S)]	B279942	250	1.00	04/14/21
21C1176-02RE1 [HW-J]	B279942	12.5	1.00	04/14/21
21C1176-03RE1 [HW-I (S)]	B279942	25.0	1.00	04/14/21
21C1176-04RE1 [HW-I (M)]	B279942	250	1.00	04/14/21
21C1176-05RE1 [HW-I (D)]	B279942	250	1.00	04/14/21
21C1176-06RE1 [HW-E]	B279942	250	1.00	04/14/21
21C1176-07RE1 [HW-F]	B279942	12.5	1.00	04/14/21
21C1176-08RE1 [HW-302]	B279942	250	1.00	04/14/21
21C1176-09RE1 [HW-2]	B279942	250	1.00	04/14/21
21C1176-10RE1 [HW-3]	B279942	25.0	1.00	04/14/21
21C1176-11RE1 [HW-300]	B279942	250	1.00	04/14/21
21C1176-12RE1 [HW-S (S)]	B279942	25.0	1.00	04/14/21
21C1176-13RE1 [HW-S (M)]	B279942	250	1.00	04/14/21
21C1176-14RE1 [HW-P (S)]	B279942	250	1.00	04/14/21
21C1176-15RE1 [HW-P (M)]	B279942	250	1.00	04/14/21
21C1176-16RE1 [RB-I(S)]	B279942	250	1.00	04/14/21
21C1176-17RE1 [RB-I (M)]	B279942	25.0	1.00	04/14/21
21C1176-18RE1 [HW-K]	B279942	250	1.00	04/14/21
21C1176-19RE1 [OW-19 (S)]	B279942	250	1.00	04/14/21
21C1176-20RE1 [OW-19(M)]	B279942	25.0	1.00	04/14/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1176-21RE1 [OW-19(D)]	B279944	250	1.00	04/13/21

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
Blank (B279942-BLK1)

Prepared: 04/14/21 Analyzed: 04/17/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Surrogate: M8FOSA	34.9		ng/L	40.0		87.2	50-150			
Surrogate: M2-4:2FTS	28.6		ng/L	37.5		76.3	50-150			
Surrogate: M2PFTA	26.0		ng/L	40.0		65.1	50-150			
Surrogate: M2-8:2FTS	30.5		ng/L	38.4		79.6	50-150			
Surrogate: MPFBA	38.6		ng/L	40.0		96.4	50-150			
Surrogate: M3HFPO-DA	37.2		ng/L	40.0		93.1	50-150			
Surrogate: M6PFDA	40.1		ng/L	40.0		100	50-150			
Surrogate: M3PFBS	35.5		ng/L	37.3		95.3	50-150			
Surrogate: M7PFUnA	35.9		ng/L	40.0		89.8	50-150			
Surrogate: M2-6:2FTS	29.8		ng/L	38.0		78.2	50-150			
Surrogate: M5PFPeA	41.0		ng/L	40.0		102	50-150			
Surrogate: M5PFHxA	37.5		ng/L	40.0		93.8	50-150			
Surrogate: M3PFHxS	37.0		ng/L	37.9		97.6	50-150			
Surrogate: M4PFHpA	38.1		ng/L	40.0		95.4	50-150			
Surrogate: M8PFOA	40.2		ng/L	40.0		100	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
Blank (B279942-BLK1)

Prepared: 04/14/21 Analyzed: 04/17/21

Surrogate: M8PFOS	36.5		ng/L	38.3		95.3	50-150			
Surrogate: M9PFNA	39.2		ng/L	40.0		97.9	50-150			
Surrogate: MPFDoA	32.5		ng/L	40.0		81.1	50-150			
Surrogate: d5-NEtFOSAA	34.3		ng/L	40.0		85.7	50-150			
Surrogate: d3-NMeFOSAA	34.6		ng/L	40.0		86.5	50-150			

LCs (B279942-BS1)

Prepared: 04/14/21 Analyzed: 04/17/21

Perfluorobutanoic acid (PFBA)	2.35	2.0	ng/L	2.00		117	73-129			
Perfluorobutanesulfonic acid (PFBS)	1.52	2.0	ng/L	1.77		85.7	72-130			J
Perfluoropentanoic acid (PFPeA)	1.76	2.0	ng/L	2.00		88.0	72-129			J
Perfluorohexanoic acid (PFHxA)	1.65	2.0	ng/L	2.00		82.5	72-129			J
11Cl-PF3OUdS (F53B Major)	1.35	2.0	ng/L	1.89		71.7	50-150			J
9Cl-PF3ONS (F53B Minor)	1.37	2.0	ng/L	1.90		72.0	50-150			J
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	1.43	2.0	ng/L	1.89		75.8	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.34	2.0	ng/L	2.00		67.2	50-150			J
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.10	2.0	ng/L	1.92		109	67-138			
Perfluorodecanoic acid (PFDA)	1.52	2.0	ng/L	2.00		76.2	71-129			J
Perfluorododecanoic acid (PFDoA)	1.53	2.0	ng/L	2.00		76.3	72-134			J
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.51	2.0	ng/L	1.78		84.9	50-150			J
Perfluoroheptanesulfonic acid (PFHpS)	1.82	2.0	ng/L	1.91		95.4	69-134			J
N-EtFOSAA	1.76	2.0	ng/L	2.00		88.1	61-135			J
N-MeFOSAA	2.01	2.0	ng/L	2.00		101	65-136			
Perfluorotetradecanoic acid (PFTA)	1.59	2.0	ng/L	2.00		79.3	71-132			J
Perfluorotridecanoic acid (PFTrDA)	1.61	2.0	ng/L	2.00		80.4	65-144			J
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.77	2.0	ng/L	1.87		94.2	63-143			J
Perfluorodecanesulfonic acid (PFDS)	1.75	2.0	ng/L	1.93		90.9	53-142			J
Perfluorooctanesulfonamide (FOSA)	1.60	2.0	ng/L	2.00		80.0	67-137			J
Perfluorononanesulfonic acid (PFNS)	1.68	2.0	ng/L	1.92		87.1	69-127			J
Perfluoro-1-hexanesulfonamide (FHxSA)	1.51	2.0	ng/L	2.00		75.5	50-150			J
Perfluoro-1-butanessulfonamide (FBSA)	1.84	2.0	ng/L	2.00		91.8	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.45	2.0	ng/L	1.83		79.5	68-131			J
Perfluoro-4-oxapentanoic acid (PFMPA)	1.88	2.0	ng/L	2.00		94.2	50-150			J
Perfluoro-5-oxahexanoic acid (PFMBA)	2.16	2.0	ng/L	2.00		108	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.80	2.0	ng/L	1.90		94.7	64-140			J
Perfluoropentanesulfonic acid (PFPeS)	1.41	2.0	ng/L	1.88		75.1	71-127			J
Perfluoroundecanoic acid (PFUnA)	1.50	2.0	ng/L	2.00		75.1	69-133			J
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	1.92	2.0	ng/L	2.00		96.1	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.47	2.0	ng/L	2.00		73.3	72-130			J
Perfluorooctanoic acid (PFOA)	1.71	2.0	ng/L	2.00		85.5	71-133			J
Perfluorooctanesulfonic acid (PFOS)	1.58	2.0	ng/L	1.86		85.1	65-140			J
Perfluorononanoic acid (PFNA)	1.70	2.0	ng/L	2.00		85.0	69-130			J
Surrogate: M8FOSA	33.1		ng/L	40.0		82.7	50-150			
Surrogate: M2-4:2FTS	27.9		ng/L	37.5		74.3	50-150			
Surrogate: M2PFTA	32.0		ng/L	40.0		80.0	50-150			
Surrogate: M2-8:2FTS	28.6		ng/L	38.4		74.4	50-150			
Surrogate: MPFBA	37.3		ng/L	40.0		93.3	50-150			
Surrogate: M3HFPO-DA	37.5		ng/L	40.0		93.7	50-150			
Surrogate: M6PFDA	38.1		ng/L	40.0		95.2	50-150			
Surrogate: M3PFBS	32.6		ng/L	37.3		87.4	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
LCS (B279942-BS1)

Prepared: 04/14/21 Analyzed: 04/17/21

Surrogate: M7PFUnA	35.7		ng/L	40.0		89.3	50-150			
Surrogate: M2-6:2FTS	27.1		ng/L	38.0		71.2	50-150			
Surrogate: M5PFPeA	38.5		ng/L	40.0		96.2	50-150			
Surrogate: M5PFHxA	34.8		ng/L	40.0		87.0	50-150			
Surrogate: M3PFHxS	35.1		ng/L	37.9		92.5	50-150			
Surrogate: M4PFHpA	36.9		ng/L	40.0		92.3	50-150			
Surrogate: M8PFOA	38.6		ng/L	40.0		96.6	50-150			
Surrogate: M8PFOS	36.3		ng/L	38.3		94.7	50-150			
Surrogate: M9PFNA	36.4		ng/L	40.0		91.0	50-150			
Surrogate: MPFDoA	33.9		ng/L	40.0		84.8	50-150			
Surrogate: d5-NEtFOSAA	32.0		ng/L	40.0		80.1	50-150			
Surrogate: d3-NMeFOSAA	31.7		ng/L	40.0		79.2	50-150			

Batch B279944 - SOP 454-PFAAS
Blank (B279944-BLK1)

Prepared: 04/13/21 Analyzed: 04/16/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B279944 - SOP 454-PFAAS
Blank (B279944-BLK1)

Prepared: 04/13/21 Analyzed: 04/16/21

Surrogate: M8FOSA	32.9		ng/L	40.0		82.2	50-150			
Surrogate: M2-4:2FTS	32.9		ng/L	37.5		87.6	50-150			
Surrogate: M2PFTA	13.7		ng/L	40.0		34.1	*	50-150		PF-02A
Surrogate: M2-8:2FTS	32.8		ng/L	38.4		85.3	50-150			
Surrogate: MPFBA	39.5		ng/L	40.0		98.8	50-150			
Surrogate: M3HFPO-DA	38.7		ng/L	40.0		96.7	50-150			
Surrogate: M6PFDA	38.6		ng/L	40.0		96.5	50-150			
Surrogate: M3PFBS	37.0		ng/L	37.3		99.3	50-150			
Surrogate: M7PFUnA	35.3		ng/L	40.0		88.2	50-150			
Surrogate: M2-6:2FTS	33.8		ng/L	38.0		88.8	50-150			
Surrogate: M5PFPeA	39.5		ng/L	40.0		98.7	50-150			
Surrogate: M5PFHxA	37.5		ng/L	40.0		93.7	50-150			
Surrogate: M3PFHxS	39.9		ng/L	37.9		105	50-150			
Surrogate: M4PFHpA	39.7		ng/L	40.0		99.2	50-150			
Surrogate: M8PFOA	41.2		ng/L	40.0		103	50-150			
Surrogate: M8PFOS	38.1		ng/L	38.3		99.5	50-150			
Surrogate: M9PFNA	38.4		ng/L	40.0		95.9	50-150			
Surrogate: MPFDoA	29.7		ng/L	40.0		74.2	50-150			
Surrogate: d5-NEtFOSAA	33.1		ng/L	40.0		82.8	50-150			
Surrogate: d3-NMeFOSAA	33.8		ng/L	40.0		84.5	50-150			

LCS (B279944-BS1)

Prepared: 04/13/21 Analyzed: 04/16/21

Perfluorobutanoic acid (PFBA)	8.12	2.0	ng/L	10.0		81.2	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.18	2.0	ng/L	8.87		80.9	72-130			
Perfluoropentanoic acid (PFPeA)	8.30	2.0	ng/L	10.0		83.0	72-129			
Perfluorohexanoic acid (PFHxA)	7.52	2.0	ng/L	10.0		75.2	72-129			
11Cl-PF3OUdS (F53B Major)	7.10	2.0	ng/L	9.43		75.3	50-150			
9Cl-PF3ONS (F53B Minor)	7.45	2.0	ng/L	9.51		78.4	50-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.21	2.0	ng/L	9.45		76.3	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.91	2.0	ng/L	10.0		89.1	50-150			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.54	2.0	ng/L	9.60		88.9	67-138			
Perfluorodecanoic acid (PFDA)	7.69	2.0	ng/L	10.0		76.9	71-129			
Perfluorododecanoic acid (PFDoA)	7.63	2.0	ng/L	10.0		76.3	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	7.38	2.0	ng/L	8.90		82.9	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	8.15	2.0	ng/L	9.53		85.5	69-134			
N-EtFOSAA	8.71	2.0	ng/L	10.0		87.1	61-135			
N-MeFOSAA	9.52	2.0	ng/L	10.0		95.2	65-136			
Perfluorotetradecanoic acid (PFTA)	7.82	2.0	ng/L	10.0		78.2	71-132			
Perfluorotridecanoic acid (PFTrDA)	7.98	2.0	ng/L	10.0		79.8	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.94	2.0	ng/L	9.37		95.4	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.23	2.0	ng/L	9.65		74.9	53-142			
Perfluorooctanesulfonamide (FOSA)	8.45	2.0	ng/L	10.0		84.5	67-137			
Perfluorononanesulfonic acid (PFNS)	8.25	2.0	ng/L	9.62		85.8	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	7.38	2.0	ng/L	10.0		73.8	50-150			
Perfluoro-1-butanesulfonamide (FBSA)	8.37	2.0	ng/L	10.0		83.7	50-150			
Perfluorohexanesulfonic acid (PFHxS)	6.95	2.0	ng/L	9.14		76.1	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.59	2.0	ng/L	10.0		85.9	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.49	2.0	ng/L	10.0		94.9	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.11	2.0	ng/L	9.51		85.3	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.28	2.0	ng/L	9.41		77.4	71-127			
Perfluoroundecanoic acid (PFUnA)	8.15	2.0	ng/L	10.0		81.5	69-133			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B279944 - SOP 454-PFAAS										
LCS (B279944-BS1)										
Prepared: 04/13/21 Analyzed: 04/16/21										
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.83	2.0	ng/L	10.0		88.3	50-150			
Perfluoroheptanoic acid (PFHpA)	7.76	2.0	ng/L	10.0		77.6	72-130			
Perfluorooctanoic acid (PFOA)	8.22	2.0	ng/L	10.0		82.2	71-133			
Perfluorooctanesulfonic acid (PFOS)	7.42	2.0	ng/L	9.28		80.0	65-140			
Perfluorononanoic acid (PFNA)	7.88	2.0	ng/L	10.0		78.8	69-130			
Surrogate: M8FOSA	31.1		ng/L	40.0		77.8	50-150			
Surrogate: M2-4:2FTS	33.5		ng/L	37.5		89.2	50-150			
Surrogate: M2PFTA	36.1		ng/L	40.0		90.4	50-150			
Surrogate: M2-8:2FTS	34.4		ng/L	38.4		89.6	50-150			
Surrogate: MPFBA	38.4		ng/L	40.0		96.1	50-150			
Surrogate: M3HFPO-DA	36.9		ng/L	40.0		92.2	50-150			
Surrogate: M6PFDA	40.8		ng/L	40.0		102	50-150			
Surrogate: M3PFBS	36.0		ng/L	37.3		96.6	50-150			
Surrogate: M7PFUnA	38.9		ng/L	40.0		97.4	50-150			
Surrogate: M2-6:2FTS	32.1		ng/L	38.0		84.5	50-150			
Surrogate: M5PFPeA	38.7		ng/L	40.0		96.7	50-150			
Surrogate: M5PFHxA	38.3		ng/L	40.0		95.8	50-150			
Surrogate: M3PFHxS	37.1		ng/L	37.9		97.8	50-150			
Surrogate: M4PFHpA	38.9		ng/L	40.0		97.4	50-150			
Surrogate: M8PFOA	39.3		ng/L	40.0		98.3	50-150			
Surrogate: M8PFOS	33.9		ng/L	38.3		93.7	50-150			
Surrogate: M9PFNA	39.1		ng/L	40.0		97.7	50-150			
Surrogate: MPFDoA	36.7		ng/L	40.0		91.8	50-150			
Surrogate: d5-NEtFOSAA	35.2		ng/L	40.0		88.1	50-150			
Surrogate: d3-NMeFOSAA	35.4		ng/L	40.0		88.5	50-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-02A	Surrogate recovery is outside of control limits. Re-analysis yielded similar surrogate non-conformance.

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2021
ME	State of Maine	MA00100	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2021
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

Fax: 413-525-6405		Email: info@contestlabs.com
Address:		
Phone:		
Project Location:		
Project Number:		
Project Manager:		
Con-Test Quote Name/Number:		
Invoice Recipient:		
Sampled By: HW		

Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
HW-300	3/17	16:45	GRAB	GW					
HW-S(S)	3/18	10:00							
HW-S(Cm)	3/18	10:50							
HW-P(S)	3/18	11:35							
HW-P(Cm)	3/18	12:00							
RH-1(S)	3/18	13:40							
RH-1(MCM)	3/18	14:30							
HW-K	3/18	11:00							
OW-HQ(S)	3/18	14:00							
OW-HQ(CM)	3/19	13:15	↓	↓					

Relinquished by: (signature) _____
Date/Time: 3/23/18 13:00

Received by: (signature) _____
Date/Time: 3/23/18 13:00

Relinquished by: (signature) _____
Date/Time: 3/23/18 17:41

Received by: (signature) _____
Date/Time: 3/23/18 17:41

Relinquished by: (signature) _____
Date/Time: 4.0 3/23/18 17:41

Retrieved by: (signature) _____
Date/Time: _____

Relinquished by: (signature) _____
Date/Time: _____

Received by: (signature) _____
Date/Time: _____

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley Winton

Received By en

Date 3/23/21

Time 1731

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 4.8
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T
pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	<u>43</u>	4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

April 19, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21C1176

Enclosed are results of analyses for samples received by the laboratory on March 23, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Raymond J. McCarthy
Project Manager

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

Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 4/19/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21C1176

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-R(S)	21C1176-01	Ground Water		SOP-454 PFAS	
HW-J	21C1176-02	Ground Water		SOP-454 PFAS	
HW-I (S)	21C1176-03	Ground Water		SOP-454 PFAS	
HW-I (M)	21C1176-04	Ground Water		SOP-454 PFAS	
HW-I (D)	21C1176-05	Ground Water		SOP-454 PFAS	
HW-E	21C1176-06	Ground Water		SOP-454 PFAS	
HW-F	21C1176-07	Ground Water		SOP-454 PFAS	
HW-302	21C1176-08	Ground Water		SOP-454 PFAS	
HW-2	21C1176-09	Ground Water		SOP-454 PFAS	
HW-3	21C1176-10	Ground Water		SOP-454 PFAS	
HW-300	21C1176-11	Ground Water		SOP-454 PFAS	
HW-S (S)	21C1176-12	Ground Water		SOP-454 PFAS	
HW-S (M)	21C1176-13	Ground Water		SOP-454 PFAS	
HW-P (S)	21C1176-14	Ground Water		SOP-454 PFAS	
HW-P (M)	21C1176-15	Ground Water		SOP-454 PFAS	
RB-1(S)	21C1176-16	Ground Water		SOP-454 PFAS	
RB-1 (M)	21C1176-17	Ground Water		SOP-454 PFAS	
HW-K	21C1176-18	Ground Water		SOP-454 PFAS	
OW-19 (S)	21C1176-19	Ground Water		SOP-454 PFAS	
OW-19(M)	21C1176-20	Ground Water		SOP-454 PFAS	
OW-19(D)	21C1176-21	Ground Water		SOP-454 PFAS	

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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.

SOP-454 PFAS**Qualifications:**

PF-02A

Surrogate recovery is outside of control limits. Re-analysis yielded similar surrogate non-conformance.

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

21C1176-14RE1[HW-P (S)]

d5-NEtFOSAA

21C1176-04RE1[HW-I (M)], 21C1176-12RE1[HW-S (S)], 21C1176-14RE1[HW-P (S)], 21C1176-17RE1[RB-1 (M)]

M2PFTA

21C1176-04RE1[HW-I (M)], 21C1176-05RE1[HW-I (D)], 21C1176-06RE1[HW-E], 21C1176-07RE1[HW-F], 21C1176-08RE1[HW-302], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)], 21C1176-19RE1[OW-19 (S)], 21C1176-20RE1[OW-19(M)], B279944-BLK1

M7PFUnA

21C1176-04RE1[HW-I (M)], 21C1176-12RE1[HW-S (S)], 21C1176-14RE1[HW-P (S)], 21C1176-17RE1[RB-1 (M)]

M8FOSA

21C1176-04RE1[HW-I (M)], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)]

MPFDoA

21C1176-04RE1[HW-I (M)], 21C1176-05RE1[HW-I (D)], 21C1176-08RE1[HW-302], 21C1176-09RE1[HW-2], 21C1176-12RE1[HW-S (S)], 21C1176-13RE1[HW-S (M)], 21C1176-14RE1[HW-P (S)], 21C1176-16RE1[RB-1(S)], 21C1176-17RE1[RB-1 (M)], 21C1176-19RE1[OW-19 (S)]

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-R(S)

Sampled: 3/17/2021 11:55

Sample ID: 21C1176-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.1	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorobutanesulfonic acid (PFBS)	0.85	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoropentanoic acid (PFPeA)	10	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorohexanoic acid (PFHxA)	6.1	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorohexanesulfonic acid (PFHxS)	10	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4.8	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.63	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluoroheptanoic acid (PFHpA)	5.0	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanoic acid (PFOA)	4.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorooctanesulfonic acid (PFOS)	2.3	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC
Perfluorononanoic acid (PFNA)	1.0	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:05	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	75.2	50-150	
M2-4:2FTS	128	50-150	
M2PFTA	66.4	50-150	
M2-8:2FTS	80.0	50-150	
MPFBA	90.0	50-150	
M3HFPO-DA	83.1	50-150	
M6PFDA	87.2	50-150	
M3PFBS	79.4	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-R(S)

Sampled: 3/17/2021 11:55

Sample ID: 21C1176-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	83.0		50-150				4/17/21 1:05			
M2-6:2FTS	87.5		50-150				4/17/21 1:05			
M5PFPeA	87.0		50-150				4/17/21 1:05			
M5PFHxA	81.6		50-150				4/17/21 1:05			
M3PFHxS	84.7		50-150				4/17/21 1:05			
M4PFHpA	76.6		50-150				4/17/21 1:05			
M8PFOA	91.4		50-150				4/17/21 1:05			
M8PFOS	86.8		50-150				4/17/21 1:05			
M9PFNA	86.5		50-150				4/17/21 1:05			
MPFDoA	74.0		50-150				4/17/21 1:05			
d5-NEtFOSAA	75.6		50-150				4/17/21 1:05			
d3-NMeFOSAA	71.2		50-150				4/17/21 1:05			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-J

Sampled: 3/17/2021 12:50

Sample ID: 21C1176-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	59	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	40	6.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoropentanoic acid (PFPeA)	150	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorohexanoic acid (PFHxA)	75	40	15	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
11Cl-PF3OUdS (F53B Major)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
9Cl-PF3ONS (F53B Minor)	ND	40	7.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	40	32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	40	29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorodecanoic acid (PFDA)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorododecanoic acid (PFDoA)	ND	40	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	40	7.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	40	26	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
N-EtFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
N-MeFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorotetradecanoic acid (PFTA)	ND	40	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	40	23	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	40	21	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanesulfonamide (FOSA)	ND	40	8.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorononanesulfonic acid (PFNS)	ND	40	18	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	15	40	14	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorohexanesulfonic acid (PFHxS)	88	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	40	7.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	440	40	22	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	40	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroundecanoic acid (PFUnA)	ND	40	9.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluoroheptanoic acid (PFHpA)	44	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanoic acid (PFOA)	61	40	7.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorooctanesulfonic acid (PFOS)	250	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC
Perfluorononanoic acid (PFNA)	35	40	9.7	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 1:35	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	92.7	50-150	
M2-4:2FTS	78.3	50-150	
M2PFTA	88.2	50-150	
M2-8:2FTS	79.1	50-150	
MPFBA	100	50-150	
M3HFPO-DA	93.2	50-150	
M6PFDA	101	50-150	
M3PFBS	96.2	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-J

Sampled: 3/17/2021 12:50

Sample ID: 21C1176-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	98.4		50-150				4/17/21 1:35			
M2-6:2FTS	71.5		50-150				4/17/21 1:35			
M5PFPeA	105		50-150				4/17/21 1:35			
M5PFHxA	94.3		50-150				4/17/21 1:35			
M3PFHxS	104		50-150				4/17/21 1:35			
M4PFHpA	97.9		50-150				4/17/21 1:35			
M8PFOA	104		50-150				4/17/21 1:35			
M8PFOS	104		50-150				4/17/21 1:35			
M9PFNA	98.8		50-150				4/17/21 1:35			
MPFDoA	90.4		50-150				4/17/21 1:35			
d5-NEtFOSAA	88.6		50-150				4/17/21 1:35			
d3-NMeFOSAA	83.9		50-150				4/17/21 1:35			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (S)

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	32	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoropentanoic acid (PFPeA)	98	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorohexanoic acid (PFHxA)	56	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorohexanesulfonic acid (PFHxS)	21	20	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1700	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluoroheptanoic acid (PFHpA)	32	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanoic acid (PFOA)	50	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorooctanesulfonic acid (PFOS)	28	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC
Perfluorononanoic acid (PFNA)	65	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:04	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.0	50-150	
M2-4:2FTS	76.0	50-150	
M2PFTA	79.7	50-150	
M2-8:2FTS	79.1	50-150	
MPFBA	97.7	50-150	
M3HFPO-DA	95.2	50-150	
M6PFDA	97.5	50-150	
M3PFBS	97.4	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (S)

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	91.9		50-150				4/17/21 2:04			
M2-6:2FTS	79.3		50-150				4/17/21 2:04			
M5PFPeA	101		50-150				4/17/21 2:04			
M5PFHxA	91.2		50-150				4/17/21 2:04			
M3PFHxS	99.0		50-150				4/17/21 2:04			
M4PFHpA	97.6		50-150				4/17/21 2:04			
M8PFOA	100		50-150				4/17/21 2:04			
M8PFOS	101		50-150				4/17/21 2:04			
M9PFNA	94.0		50-150				4/17/21 2:04			
MPFDoA	84.5		50-150				4/17/21 2:04			
d5-NEtFOSAA	85.0		50-150				4/17/21 2:04			
d3-NMeFOSAA	80.4		50-150				4/17/21 2:04			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (M)

Sampled: 3/17/2021 14:10

Sample ID: 21C1176-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	2.0	0.57	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoropentanoic acid (PFPeA)	1.9	2.0	0.66	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorohexanoic acid (PFHxA)	1.8	2.0	0.75	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorohexanesulfonic acid (PFHxS)	5.2	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluoroheptanoic acid (PFHpA)	0.86	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanoic acid (PFOA)	1.4	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorooctanesulfonic acid (PFOS)	13	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC
Perfluorononanoic acid (PFNA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 2:34	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	16.9 *	50-150	PF-02A
M2-4:2FTS	90.7	50-150	
M2PFTA	0.898 *	50-150	PF-02A
M2-8:2FTS	71.0	50-150	
MPFBA	95.2	50-150	
M3HFPO-DA	92.6	50-150	
M6PFDA	71.9	50-150	
M3PFBS	110	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (M)

Sampled: 3/17/2021 14:10

Sample ID: 21C1176-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	35.5	*		50-150		PF-02A		4/17/21	2:34	
M2-6:2FTS	77.8			50-150				4/17/21	2:34	
M5PFPeA	93.6			50-150				4/17/21	2:34	
M5PFHxA	90.1			50-150				4/17/21	2:34	
M3PFHxS	111			50-150				4/17/21	2:34	
M4PFHpA	85.7			50-150				4/17/21	2:34	
M8PFOA	96.5			50-150				4/17/21	2:34	
M8PFOS	97.6			50-150				4/17/21	2:34	
M9PFNA	86.1			50-150				4/17/21	2:34	
MPFDoA	11.1	*		50-150		PF-02A		4/17/21	2:34	
d5-NEtFOSAA	41.6	*		50-150		PF-02A		4/17/21	2:34	
d3-NMeFOSAA	51.5			50-150				4/17/21	2:34	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (D)

Sampled: 3/17/2021 14:35

Sample ID: 21C1176-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	9.9	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorobutanesulfonic acid (PFBS)	1.7	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoropentanoic acid (PFPeA)	37	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorohexanoic acid (PFHxA)	25	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorohexanesulfonic acid (PFHxS)	31	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.7	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluoroheptanoic acid (PFHpA)	6.5	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanoic acid (PFOA)	4.3	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorooctanesulfonic acid (PFOS)	38	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC
Perfluorononanoic acid (PFNA)	0.75	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:04	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	60.0	50-150	
M2-4:2FTS	79.0	50-150	
M2PFTA	11.9	50-150	PF-02A
M2-8:2FTS	69.4	50-150	
MPFBA	91.2	50-150	
M3HFPO-DA	93.1	50-150	
M6PFDA	84.9	50-150	
M3PFBS	93.0	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-1 (D)

Sampled: 3/17/2021 14:35

Sample ID: 21C1176-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	67.1		50-150				4/17/21 3:04			
M2-6:2FTS	66.3		50-150				4/17/21 3:04			
M5PFPeA	91.8		50-150				4/17/21 3:04			
M5PFHxA	85.7		50-150				4/17/21 3:04			
M3PFHxS	96.5		50-150				4/17/21 3:04			
M4PFHpA	85.5		50-150				4/17/21 3:04			
M8PFOA	95.0		50-150				4/17/21 3:04			
M8PFOS	91.1		50-150				4/17/21 3:04			
M9PFNA	88.6		50-150				4/17/21 3:04			
MPFD_oA	46.9		*	50-150	PF-02A		4/17/21 3:04			
d5-NEtFOSAA	63.0		50-150				4/17/21 3:04			
d3-NMeFOSAA	66.4		50-150				4/17/21 3:04			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-E

Sampled: 3/17/2021 15:10

Sample ID: 21C1176-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	5.5	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorobutanesulfonic acid (PFBS)	0.35	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoropentanoic acid (PFPeA)	16	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorohexanoic acid (PFHxA)	5.5	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.5	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.5	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluoroheptanoic acid (PFHpA)	14	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanoic acid (PFOA)	0.95	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorooctanesulfonic acid (PFOS)	0.82	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC
Perfluorononanoic acid (PFNA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 3:33	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	79.8	50-150	
M2-4:2FTS	79.8	50-150	
M2PFTA	36.4	50-150	PF-02A
M2-8:2FTS	77.7	50-150	
MPFBA	95.1	50-150	
M3HFPO-DA	92.0	50-150	
M6PFDA	94.4	50-150	
M3PFBS	92.1	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-E

Sampled: 3/17/2021 15:10

Sample ID: 21C1176-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	85.0		50-150				4/17/21 3:33			
M2-6:2FTS	72.7		50-150				4/17/21 3:33			
M5PFPeA	93.3		50-150				4/17/21 3:33			
M5PFHxA	89.8		50-150				4/17/21 3:33			
M3PFHxS	100		50-150				4/17/21 3:33			
M4PFHpA	87.4		50-150				4/17/21 3:33			
M8PFOA	101		50-150				4/17/21 3:33			
M8PFOS	95.5		50-150				4/17/21 3:33			
M9PFNA	95.5		50-150				4/17/21 3:33			
MPFDoA	73.7		50-150				4/17/21 3:33			
d5-NEtFOSAA	77.4		50-150				4/17/21 3:33			
d3-NMeFOSAA	75.6		50-150				4/17/21 3:33			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-F

Sampled: 3/17/2021 15:35

Sample ID: 21C1176-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	420	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	40	6.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoropentanoic acid (PFPeA)	1800	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorohexanoic acid (PFHxA)	960	40	15	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
11Cl-PF3OUdS (F53B Major)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
9Cl-PF3ONS (F53B Minor)	ND	40	7.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	40	32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	40	29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorodecanoic acid (PFDA)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorododecanoic acid (PFDoA)	ND	40	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	40	7.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	40	26	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
N-EtFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
N-MeFOSAA	ND	40	19	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorotetradecanoic acid (PFTA)	ND	40	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	40	23	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	40	21	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanesulfonamide (FOSA)	ND	40	8.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorononanesulfonic acid (PFNS)	ND	40	18	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	40	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorohexanesulfonic acid (PFHxS)	ND	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	40	7.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	40	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4800	40	22	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	40	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroundecanoic acid (PFUnA)	ND	40	9.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	40	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluoroheptanoic acid (PFHpA)	390	40	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanoic acid (PFOA)	52	40	7.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorooctanesulfonic acid (PFOS)	ND	40	7.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC
Perfluorononanoic acid (PFNA)	ND	40	9.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 4:03	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	69.3	50-150	
M2-4:2FTS	78.0	50-150	
M2PFTA	21.1	50-150	PF-02A
M2-8:2FTS	73.8	50-150	
MPFBA	93.8	50-150	
M3HFPO-DA	90.9	50-150	
M6PFDA	88.8	50-150	
M3PFBS	96.4	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-F

Sampled: 3/17/2021 15:35

Sample ID: 21C1176-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	76.9		50-150				4/17/21 4:03			
M2-6:2FTS	93.0		50-150				4/17/21 4:03			
M5PFPeA	96.9		50-150				4/17/21 4:03			
M5PFHxA	88.8		50-150				4/17/21 4:03			
M3PFHxS	101		50-150				4/17/21 4:03			
M4PFHpA	94.4		50-150				4/17/21 4:03			
M8PFOA	96.9		50-150				4/17/21 4:03			
M8PFOS	96.8		50-150				4/17/21 4:03			
M9PFNA	90.9		50-150				4/17/21 4:03			
MPFDoA	60.6		50-150				4/17/21 4:03			
d5-NEtFOSAA	74.7		50-150				4/17/21 4:03			
d3-NMeFOSAA	71.4		50-150				4/17/21 4:03			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-302

Sampled: 3/17/2021 16:30

Sample ID: 21C1176-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.9	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorobutanesulfonic acid (PFBS)	1.6	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoropentanoic acid (PFPeA)	18	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorohexanoic acid (PFHxA)	11	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.1	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorodecanoic acid (PFDA)	0.86	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanesulfonamide (FOSA)	0.82	2.0	0.44	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.2	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	12	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.96	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroundecanoic acid (PFUnA)	3.3	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluoroheptanoic acid (PFHpA)	6.6	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanoic acid (PFOA)	5.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorooctanesulfonic acid (PFOS)	4.1	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC
Perfluorononanoic acid (PFNA)	6.6	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:02	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	54.2	50-150	
M2-4:2FTS	83.8	50-150	
M2PFTA	7.18	50-150	PF-02A
M2-8:2FTS	77.8	50-150	
MPFBA	95.5	50-150	
M3HFPO-DA	95.4	50-150	
M6PFDA	88.8	50-150	
M3PFBS	101	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-302

Sampled: 3/17/2021 16:30

Sample ID: 21C1176-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date	Date/Time	Analyst
								Prepared	Analyzed	
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		70.8		50-150					4/17/21 5:02	
M2-6:2FTS		77.8		50-150					4/17/21 5:02	
M5PFPeA		99.6		50-150					4/17/21 5:02	
M5PFHxA		90.9		50-150					4/17/21 5:02	
M3PFHxS		103		50-150					4/17/21 5:02	
M4PFHpA		84.4		50-150					4/17/21 5:02	
M8PFOA		101		50-150					4/17/21 5:02	
M8PFOS		96.2		50-150					4/17/21 5:02	
M9PFNA		93.5		50-150					4/17/21 5:02	
MPFDoA		40.9	*	50-150		PF-02A			4/17/21 5:02	
d5-NEtFOSAA		72.8		50-150					4/17/21 5:02	
d3-NMeFOSAA		70.4		50-150					4/17/21 5:02	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-2

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	14	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorobutanesulfonic acid (PFBS)	0.84	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoropentanoic acid (PFPeA)	70	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorohexanoic acid (PFHxA)	27	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorodecanoic acid (PFDA)	1.4	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	1.0	2.0	0.70	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.3	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	64	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluoroheptanoic acid (PFHpA)	20	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanoic acid (PFOA)	17	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorooctanesulfonic acid (PFOS)	21	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC
Perfluorononanoic acid (PFNA)	10	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 5:32	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
M8FOSA	46.0	*	50-150	PF-02A
M2-4:2FTS	147		50-150	4/17/21 5:32
M2PFTA	2.12	*	50-150	PF-02A
M2-8:2FTS	103		50-150	4/17/21 5:32
MPFBA	101		50-150	4/17/21 5:32
M3HFPO-DA	102		50-150	4/17/21 5:32
M6PFDA	85.5		50-150	4/17/21 5:32
M3PFBS	104		50-150	4/17/21 5:32

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-2

Sampled: 3/17/2021 13:40

Sample ID: 21C1176-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	56.2			50-150				4/17/21	5:32	
M2-6:2FTS	128			50-150				4/17/21	5:32	
M5PFPeA	105			50-150				4/17/21	5:32	
M5PFHxA	93.3			50-150				4/17/21	5:32	
M3PFHxS	110			50-150				4/17/21	5:32	
M4PFHpA	75.7			50-150				4/17/21	5:32	
M8PFOA	103			50-150				4/17/21	5:32	
M8PFOS	98.2			50-150				4/17/21	5:32	
M9PFNA	90.9			50-150				4/17/21	5:32	
MPFDoA	24.2	*		50-150		PF-02A		4/17/21	5:32	
d5-NEtFOSAA	60.4			50-150				4/17/21	5:32	
d3-NMeFOSAA	66.1			50-150				4/17/21	5:32	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-3

Sampled: 3/17/2021 15:00

Sample ID: 21C1176-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	70	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoropentanoic acid (PFPeA)	260	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorohexanoic acid (PFHxA)	110	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorohexanesulfonic acid (PFHxS)	6.4	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	470	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluoroheptanoic acid (PFHpA)	84	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanoic acid (PFOA)	64	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorooctanesulfonic acid (PFOS)	56	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC
Perfluorononanoic acid (PFNA)	19	20	4.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:02	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.4	50-150	
M2-4:2FTS	76.7	50-150	
M2PFTA	78.4	50-150	
M2-8:2FTS	85.0	50-150	
MPFBA	95.4	50-150	
M3HFPO-DA	89.5	50-150	
M6PFDA	98.9	50-150	
M3PFBS	94.0	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-3

Sampled: 3/17/2021 15:00

Sample ID: 21C1176-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	91.4		50-150				4/17/21 6:02			
M2-6:2FTS	72.5		50-150				4/17/21 6:02			
M5PFPeA	101		50-150				4/17/21 6:02			
M5PFHxA	90.9		50-150				4/17/21 6:02			
M3PFHxS	98.1		50-150				4/17/21 6:02			
M4PFHpA	92.2		50-150				4/17/21 6:02			
M8PFOA	98.8		50-150				4/17/21 6:02			
M8PFOS	100		50-150				4/17/21 6:02			
M9PFNA	92.4		50-150				4/17/21 6:02			
MPFDoA	83.5		50-150				4/17/21 6:02			
d5-NEtFOSAA	80.8		50-150				4/17/21 6:02			
d3-NMeFOSAA	81.3		50-150				4/17/21 6:02			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-300

Sampled: 3/17/2021 16:45

Sample ID: 21C1176-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.4	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorobutanesulfonic acid (PFBS)	0.70	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoropentanoic acid (PFPeA)	11	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorohexanoic acid (PFHxA)	5.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorohexanesulfonic acid (PFHxS)	9.9	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluoroheptanoic acid (PFHpA)	2.8	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanoic acid (PFOA)	4.4	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorooctanesulfonic acid (PFOS)	15	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC
Perfluorononanoic acid (PFNA)	0.99	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 6:31	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	81.0	50-150	
M2-4:2FTS	79.1	50-150	
M2PFTA	74.6	50-150	
M2-8:2FTS	85.2	50-150	
MPFBA	91.3	50-150	
M3HFPO-DA	90.9	50-150	
M6PFDA	95.2	50-150	
M3PFBS	89.8	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-300

Sampled: 3/17/2021 16:45

Sample ID: 21C1176-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	86.7		50-150				4/17/21 6:31			
M2-6:2FTS	68.8		50-150				4/17/21 6:31			
M5PFPeA	93.9		50-150				4/17/21 6:31			
M5PFHxA	83.7		50-150				4/17/21 6:31			
M3PFHxS	98.3		50-150				4/17/21 6:31			
M4PFHpA	71.5		50-150				4/17/21 6:31			
M8PFOA	94.2		50-150				4/17/21 6:31			
M8PFOS	96.1		50-150				4/17/21 6:31			
M9PFNA	87.6		50-150				4/17/21 6:31			
MPFDoA	77.6		50-150				4/17/21 6:31			
d5-NEtFOSAA	75.9		50-150				4/17/21 6:31			
d3-NMeFOSAA	75.2		50-150				4/17/21 6:31			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (S)

Sampled: 3/18/2021 10:00

Sample ID: 21C1176-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	89	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorobutanesulfonic acid (PFBS)	5.4	20	3.2	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoropentanoic acid (PFPeA)	430	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorohexanoic acid (PFHxA)	300	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorododecanoic acid (PFDoA)	11	20	2.9	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-1-butanefulfonamide (FBFA)	13	20	5.5	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorohexanesulfonic acid (PFHxS)	83	20	5.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3100	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoropentanesulfonic acid (PFPeS)	7.1	20	5.1	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluoroheptanoic acid (PFHpA)	140	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanoic acid (PFOA)	78	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorooctanesulfonic acid (PFOS)	30	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC
Perfluorononanoic acid (PFNA)	24	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:01	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	19.4 *	50-150	PF-02A
M2-4:2FTS	87.5	50-150	
M2PFTA	1.30 *	50-150	PF-02A
M2-8:2FTS	72.2	50-150	
MPFBA	94.0	50-150	
M3HFPO-DA	95.7	50-150	
M6PFDA	79.9	50-150	
M3PFBS	107	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (S)

Sampled: 3/18/2021 10:00

Sample ID: 21C1176-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	47.0	*		50-150		PF-02A		4/17/21	7:01	
M2-6:2FTS	100			50-150				4/17/21	7:01	
M5PFPeA	100			50-150				4/17/21	7:01	
M5PFHxA	92.2			50-150				4/17/21	7:01	
M3PFHxS	108			50-150				4/17/21	7:01	
M4PFHpA	93.4			50-150				4/17/21	7:01	
M8PFOA	97.9			50-150				4/17/21	7:01	
M8PFOS	96.0			50-150				4/17/21	7:01	
M9PFNA	90.6			50-150				4/17/21	7:01	
MPFDoA	15.6	*		50-150		PF-02A		4/17/21	7:01	
d5-NEtFOSAA	44.8	*		50-150		PF-02A		4/17/21	7:01	
d3-NMeFOSAA	56.6			50-150				4/17/21	7:01	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (M)

Sampled: 3/18/2021 10:30

Sample ID: 21C1176-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.9	2.0	0.57	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorobutanesulfonic acid (PFBS)	0.46	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoropentanoic acid (PFPeA)	3.9	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorohexanoic acid (PFHxA)	2.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorohexanesulfonic acid (PFHxS)	7.3	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	6.7	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluoroheptanoic acid (PFHpA)	1.1	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanoic acid (PFOA)	1.8	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorooctanesulfonic acid (PFOS)	6.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC
Perfluorononanoic acid (PFNA)	0.57	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 7:30	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	43.3 *	50-150	PF-02A
M2-4:2FTS	86.7	50-150	
M2PFTA	2.23 *	50-150	PF-02A
M2-8:2FTS	83.9	50-150	
MPFBA	95.3	50-150	
M3HFPO-DA	58.4	50-150	
M6PFDA	90.3	50-150	
M3PFBS	102	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-S (M)

Sampled: 3/18/2021 10:30

Sample ID: 21C1176-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	70.9			50-150				4/17/21	7:30	
M2-6:2FTS	73.8			50-150				4/17/21	7:30	
M5PFPeA	96.5			50-150				4/17/21	7:30	
M5PFHxA	91.3			50-150				4/17/21	7:30	
M3PFHxS	106			50-150				4/17/21	7:30	
M4PFHpA	84.8			50-150				4/17/21	7:30	
M8PFOA	98.6			50-150				4/17/21	7:30	
M8PFOS	100			50-150				4/17/21	7:30	
M9PFNA	91.1			50-150				4/17/21	7:30	
MPFDoA	37.3	*		50-150		PF-02A		4/17/21	7:30	
d5-NEtFOSAA	62.7			50-150				4/17/21	7:30	
d3-NMeFOSAA	68.2			50-150				4/17/21	7:30	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (S)

Sampled: 3/18/2021 11:35

Sample ID: 21C1176-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.2	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoropentanoic acid (PFPeA)	22	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorohexanoic acid (PFHxA)	14	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorodecanoic acid (PFDA)	0.40	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.74	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.4	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroundecanoic acid (PFUnA)	0.81	2.0	0.49	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluoroheptanoic acid (PFHpA)	6.7	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanoic acid (PFOA)	4.2	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorooctanesulfonic acid (PFOS)	0.49	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC
Perfluorononanoic acid (PFNA)	2.0	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:00	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	12.0 *	50-150	PF-02A
M2-4:2FTS	91.0	50-150	
M2PFTA	1.30 *	50-150	PF-02A
M2-8:2FTS	75.5	50-150	
MPFBA	93.7	50-150	
M3HFPO-DA	101	50-150	
M6PFDA	77.6	50-150	
M3PFBS	105	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (S)

Sampled: 3/18/2021 11:35

Sample ID: 21C1176-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	38.4	*		50-150		PF-02A		4/17/21	8:00	
M2-6:2FTS	77.5			50-150				4/17/21	8:00	
M5PFPeA	95.7			50-150				4/17/21	8:00	
M5PFHxA	90.8			50-150				4/17/21	8:00	
M3PFHxS	105			50-150				4/17/21	8:00	
M4PFHpA	87.0			50-150				4/17/21	8:00	
M8PFOA	96.6			50-150				4/17/21	8:00	
M8PFOS	98.9			50-150				4/17/21	8:00	
M9PFNA	91.6			50-150				4/17/21	8:00	
MPFDoA	8.32	*		50-150		PF-02A		4/17/21	8:00	
d5-NEtFOSAA	36.1	*		50-150		PF-02A		4/17/21	8:00	
d3-NMeFOSAA	45.4	*		50-150		PF-02A		4/17/21	8:00	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (M)

Sampled: 3/18/2021 12:00

Sample ID: 21C1176-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	25	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorobutanesulfonic acid (PFBS)	0.51	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoropentanoic acid (PFPeA)	76	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorohexanoic acid (PFHxA)	34	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.5	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluoroheptanoic acid (PFHpA)	17	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanoic acid (PFOA)	9.6	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorooctanesulfonic acid (PFOS)	3.5	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC
Perfluorononanoic acid (PFNA)	6.0	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:30	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	81.1	50-150	
M2-4:2FTS	75.0	50-150	
M2PFTA	68.6	50-150	
M2-8:2FTS	74.6	50-150	
MPFBA	90.3	50-150	
M3HFPO-DA	89.7	50-150	
M6PFDA	94.4	50-150	
M3PFBS	86.4	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-P (M)

Sampled: 3/18/2021 12:00

Sample ID: 21C1176-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	83.9		50-150				4/17/21 8:30			
M2-6:2FTS	63.2		50-150				4/17/21 8:30			
M5PFPeA	93.9		50-150				4/17/21 8:30			
M5PFHxA	83.7		50-150				4/17/21 8:30			
M3PFHxS	92.7		50-150				4/17/21 8:30			
M4PFHpA	64.4		50-150				4/17/21 8:30			
M8PFOA	93.4		50-150				4/17/21 8:30			
M8PFOS	86.4		50-150				4/17/21 8:30			
M9PFNA	89.4		50-150				4/17/21 8:30			
MPFDoA	75.2		50-150				4/17/21 8:30			
d5-NEtFOSAA	74.5		50-150				4/17/21 8:30			
d3-NMeFOSAA	74.8		50-150				4/17/21 8:30			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1(S)

Sampled: 3/18/2021 13:40

Sample ID: 21C1176-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.2	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorobutanesulfonic acid (PFBS)	2.0	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoropentanoic acid (PFPeA)	9.8	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorohexanoic acid (PFHxA)	12	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-1-butanefulfonamide (FBFA)	1.1	2.0	0.55	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorohexanesulfonic acid (PFHxS)	30	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.8	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluoroheptanoic acid (PFHpA)	5.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanoic acid (PFOA)	8.7	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorooctanesulfonic acid (PFOS)	40	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC
Perfluorononanoic acid (PFNA)	2.5	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 8:59	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	41.1 *	50-150	PF-02A
M2-4:2FTS	94.5	50-150	
M2PFTA	3.75 *	50-150	PF-02A
M2-8:2FTS	80.2	50-150	
MPFBA	95.2	50-150	
M3HFPO-DA	91.7	50-150	
M6PFDA	91.1	50-150	
M3PFBS	100	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1(S)

Sampled: 3/18/2021 13:40

Sample ID: 21C1176-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	66.9			50-150				4/17/21	8:59	
M2-6:2FTS	77.8			50-150				4/17/21	8:59	
M5PFPeA	97.5			50-150				4/17/21	8:59	
M5PFHxA	92.6			50-150				4/17/21	8:59	
M3PFHxS	100			50-150				4/17/21	8:59	
M4PFHpA	71.3			50-150				4/17/21	8:59	
M8PFOA	99.3			50-150				4/17/21	8:59	
M8PFOS	96.1			50-150				4/17/21	8:59	
M9PFNA	89.9			50-150				4/17/21	8:59	
MPFD_oA	36.7	*		50-150		PF-02A		4/17/21	8:59	
d5-NEtFOSAA	64.8			50-150				4/17/21	8:59	
d3-NMeFOSAA	66.9			50-150				4/17/21	8:59	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1 (M)

Sampled: 3/18/2021 14:30

Sample ID: 21C1176-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	16	20	5.7	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoropentanoic acid (PFPeA)	44	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorohexanoic acid (PFHxA)	24	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorohexanesulfonic acid (PFHxS)	17	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	55	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluoroheptanoic acid (PFHpA)	13	20	6.2	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanoic acid (PFOA)	13	20	3.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorooctanesulfonic acid (PFOS)	75	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC
Perfluorononanoic acid (PFNA)	7.2	20	4.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 9:29	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
M8FOSA	23.8	*	50-150	PF-02A
M2-4:2FTS	93.8		50-150	4/17/21 9:29
M2PFTA	0.683	*	50-150	PF-02A
M2-8:2FTS	71.6		50-150	4/17/21 9:29
MPFBA	100		50-150	4/17/21 9:29
M3HFPO-DA	104		50-150	4/17/21 9:29
M6PFDA	79.7		50-150	4/17/21 9:29
M3PFBS	114		50-150	4/17/21 9:29

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: RB-1 (M)

Sampled: 3/18/2021 14:30

Sample ID: 21C1176-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	46.0	*		50-150		PF-02A		4/17/21	9:29	
M2-6:2FTS	84.9			50-150				4/17/21	9:29	
M5PFPeA	104			50-150				4/17/21	9:29	
M5PFHxA	100			50-150				4/17/21	9:29	
M3PFHxS	123			50-150				4/17/21	9:29	
M4PFHpA	102			50-150				4/17/21	9:29	
M8PFOA	104			50-150				4/17/21	9:29	
M8PFOS	99.8			50-150				4/17/21	9:29	
M9PFNA	96.8			50-150				4/17/21	9:29	
MPFDoA	13.6	*		50-150		PF-02A		4/17/21	9:29	
d5-NEtFOSAA	48.1	*		50-150		PF-02A		4/17/21	9:29	
d3-NMeFOSAA	58.5			50-150				4/17/21	9:29	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-K

Sampled: 3/18/2021 11:00

Sample ID: 21C1176-18

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.3	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoropentanoic acid (PFPeA)	17	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorohexanoic acid (PFHxA)	7.7	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
N-EtFOSA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
N-MeFOSA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.66	2.0	0.58	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluoroheptanoic acid (PFHpA)	4.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanoic acid (PFOA)	3.6	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorooctanesulfonic acid (PFOS)	1.5	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC
Perfluorononanoic acid (PFNA)	3.7	2.0	0.48	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:28	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	84.7	50-150	
M2-4:2FTS	86.6	50-150	
M2PFTA	80.4	50-150	
M2-8:2FTS	82.4	50-150	
MPFBA	96.3	50-150	
M3HFPO-DA	90.6	50-150	
M6PFDA	96.3	50-150	
M3PFBS	97.3	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: HW-K

Sampled: 3/18/2021 11:00

Sample ID: 21C1176-18

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	90.5		50-150				4/17/21 10:28			
M2-6:2FTS	71.5		50-150				4/17/21 10:28			
M5PFPeA	97.9		50-150				4/17/21 10:28			
M5PFHxA	91.0		50-150				4/17/21 10:28			
M3PFHxS	101		50-150				4/17/21 10:28			
M4PFHpA	85.5		50-150				4/17/21 10:28			
M8PFOA	101		50-150				4/17/21 10:28			
M8PFOS	102		50-150				4/17/21 10:28			
M9PFNA	92.0		50-150				4/17/21 10:28			
MPFDoA	83.5		50-150				4/17/21 10:28			
d5-NEtFOSAA	80.6		50-150				4/17/21 10:28			
d3-NMeFOSAA	77.1		50-150				4/17/21 10:28			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19 (S)

Sampled: 3/18/2021 14:00

Sample ID: 21C1176-19

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.6	2.0	0.57	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorobutanesulfonic acid (PFBS)	2.9	2.0	0.32	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoropentanoic acid (PFPeA)	13	2.0	0.66	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorohexanoic acid (PFHxA)	7.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorodecanoic acid (PFDA)	1.0	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorohexanesulfonic acid (PFHxS)	6.4	2.0	0.58	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluoroheptanoic acid (PFHpA)	4.4	2.0	0.62	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanoic acid (PFOA)	7.0	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorooctanesulfonic acid (PFOS)	15	2.0	0.38	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC
Perfluorononanoic acid (PFNA)	1.2	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 10:57	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	56.3	50-150	
M2-4:2FTS	103	50-150	
M2PFTA	3.50	50-150	PF-02A
M2-8:2FTS	79.8	50-150	
MPFBA	97.4	50-150	
M3HFPO-DA	99.4	50-150	
M6PFDA	87.5	50-150	
M3PFBS	97.1	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19 (S)

Sampled: 3/18/2021 14:00

Sample ID: 21C1176-19

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates		% Recovery		Recovery Limits		Flag/Qual				
M7PFUnA		66.6		50-150					4/17/21 10:57	
M2-6:2FTS		79.6		50-150					4/17/21 10:57	
M5PFPeA		95.7		50-150					4/17/21 10:57	
M5PFHxA		92.0		50-150					4/17/21 10:57	
M3PFHxS		105		50-150					4/17/21 10:57	
M4PFHpA		91.3		50-150					4/17/21 10:57	
M8PFOA		97.9		50-150					4/17/21 10:57	
M8PFOS		96.1		50-150					4/17/21 10:57	
M9PFNA		89.9		50-150					4/17/21 10:57	
MPFDoA		38.2	*	50-150		PF-02A			4/17/21 10:57	
d5-NEtFOSAA		65.3		50-150					4/17/21 10:57	
d3-NMeFOSAA		69.2		50-150					4/17/21 10:57	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(M)

Sampled: 3/19/2021 13:15

Sample ID: 21C1176-20

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	43	20	5.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	20	3.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoropentanoic acid (PFPeA)	160	20	6.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorohexanoic acid (PFHxA)	100	20	7.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
11Cl-PF3OUdS (F53B Major)	ND	20	5.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
9Cl-PF3ONS (F53B Minor)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	20	16	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	20	14	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorodecanoic acid (PFDA)	ND	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorododecanoic acid (PFDoA)	ND	20	2.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	20	3.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	20	13	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
N-EtFOSAA	ND	20	9.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
N-MeFOSAA	ND	20	9.6	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorotetradecanoic acid (PFTA)	ND	20	8.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	20	12	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	20	10	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	20	6.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanesulfonamide (FOSA)	ND	20	4.4	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorononanesulfonic acid (PFNS)	ND	20	8.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	20	7.0	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	20	5.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorohexanesulfonic acid (PFHxS)	14	20	5.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	20	3.7	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	20	6.5	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	20	11	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	20	5.1	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroundecanoic acid (PFUnA)	ND	20	4.9	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	20	5.3	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluoroheptanoic acid (PFHpA)	44	20	6.2	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanoic acid (PFOA)	9.4	20	3.8	ng/L	1	J	SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorooctanesulfonic acid (PFOS)	27	20	3.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC
Perfluorononanoic acid (PFNA)	ND	20	4.8	ng/L	1		SOP-454 PFAS	4/14/21	4/17/21 11:27	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	67.9	50-150	
M2-4:2FTS	79.8	50-150	
M2PFTA	13.8	*	50-150
M2-8:2FTS	75.3	50-150	PF-02A
MPFBA	93.9	50-150	
M3HFPO-DA	93.4	50-150	
M6PFDA	89.8	50-150	
M3PFBS	95.0	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(M)

Sampled: 3/19/2021 13:15

Sample ID: 21C1176-20

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	74.7		50-150				4/17/21 11:27			
M2-6:2FTS	72.2		50-150				4/17/21 11:27			
M5PFPeA	99.2		50-150				4/17/21 11:27			
M5PFHxA	87.9		50-150				4/17/21 11:27			
M3PFHxS	99.5		50-150				4/17/21 11:27			
M4PFHpA	89.8		50-150				4/17/21 11:27			
M8PFOA	95.2		50-150				4/17/21 11:27			
M8PFOS	95.5		50-150				4/17/21 11:27			
M9PFNA	89.0		50-150				4/17/21 11:27			
MPFDoA	56.7		50-150				4/17/21 11:27			
d5-NEtFOSAA	70.4		50-150				4/17/21 11:27			
d3-NMeFOSAA	71.6		50-150				4/17/21 11:27			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(D)

Sampled: 3/19/2021 14:30

Sample ID: 21C1176-21

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	24	2.0	0.57	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorobutanesulfonic acid (PFBS)	1.6	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoropentanoic acid (PFPeA)	110	2.0	0.66	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorohexanoic acid (PFHxA)	71	2.0	0.75	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.70	2.0	0.55	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorohexanesulfonic acid (PFHxS)	26	2.0	0.58	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.8	2.0	0.51	ng/L	1	J	SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluoroheptanoic acid (PFHpA)	18	2.0	0.62	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanoic acid (PFOA)	9.7	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorooctanesulfonic acid (PFOS)	47	2.0	0.38	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC
Perfluorononanoic acid (PFNA)	2.9	2.0	0.48	ng/L	1		SOP-454 PFAS	4/13/21	4/16/21 16:12	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	87.9	50-150	
M2-4:2FTS	85.2	50-150	
M2PFTA	64.6	50-150	
M2-8:2FTS	92.3	50-150	
MPFBA	99.2	50-150	
M3HFPO-DA	92.1	50-150	
M6PFDA	98.0	50-150	
M3PFBS	98.0	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21C1176

Date Received: 3/23/2021

Field Sample #: OW-19(D)

Sampled: 3/19/2021 14:30

Sample ID: 21C1176-21

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	89.6		50-150				4/16/21 16:12			
M2-6:2FTS	85.5		50-150				4/16/21 16:12			
M5PFPeA	95.7		50-150				4/16/21 16:12			
M5PFHxA	91.8		50-150				4/16/21 16:12			
M3PFHxS	108		50-150				4/16/21 16:12			
M4PFHpA	97.8		50-150				4/16/21 16:12			
M8PFOA	101		50-150				4/16/21 16:12			
M8PFOS	103		50-150				4/16/21 16:12			
M9PFNA	95.2		50-150				4/16/21 16:12			
MPFDoA	82.2		50-150				4/16/21 16:12			
d5-NEtFOSAA	83.4		50-150				4/16/21 16:12			
d3-NMeFOSAA	83.1		50-150				4/16/21 16:12			

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Sample Extraction Data**Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1176-01RE1 [HW-R(S)]	B279942	250	1.00	04/14/21
21C1176-02RE1 [HW-J]	B279942	12.5	1.00	04/14/21
21C1176-03RE1 [HW-I (S)]	B279942	25.0	1.00	04/14/21
21C1176-04RE1 [HW-I (M)]	B279942	250	1.00	04/14/21
21C1176-05RE1 [HW-I (D)]	B279942	250	1.00	04/14/21
21C1176-06RE1 [HW-E]	B279942	250	1.00	04/14/21
21C1176-07RE1 [HW-F]	B279942	12.5	1.00	04/14/21
21C1176-08RE1 [HW-302]	B279942	250	1.00	04/14/21
21C1176-09RE1 [HW-2]	B279942	250	1.00	04/14/21
21C1176-10RE1 [HW-3]	B279942	25.0	1.00	04/14/21
21C1176-11RE1 [HW-300]	B279942	250	1.00	04/14/21
21C1176-12RE1 [HW-S (S)]	B279942	25.0	1.00	04/14/21
21C1176-13RE1 [HW-S (M)]	B279942	250	1.00	04/14/21
21C1176-14RE1 [HW-P (S)]	B279942	250	1.00	04/14/21
21C1176-15RE1 [HW-P (M)]	B279942	250	1.00	04/14/21
21C1176-16RE1 [RB-I(S)]	B279942	250	1.00	04/14/21
21C1176-17RE1 [RB-I (M)]	B279942	25.0	1.00	04/14/21
21C1176-18RE1 [HW-K]	B279942	250	1.00	04/14/21
21C1176-19RE1 [OW-19 (S)]	B279942	250	1.00	04/14/21
21C1176-20RE1 [OW-19(M)]	B279942	25.0	1.00	04/14/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21C1176-21RE1 [OW-19(D)]	B279944	250	1.00	04/13/21

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
Blank (B279942-BLK1)

Prepared: 04/14/21 Analyzed: 04/17/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Surrogate: M8FOSA	34.9		ng/L	40.0		87.2	50-150			
Surrogate: M2-4:2FTS	28.6		ng/L	37.5		76.3	50-150			
Surrogate: M2PFTA	26.0		ng/L	40.0		65.1	50-150			
Surrogate: M2-8:2FTS	30.5		ng/L	38.4		79.6	50-150			
Surrogate: MPFBA	38.6		ng/L	40.0		96.4	50-150			
Surrogate: M3HFPO-DA	37.2		ng/L	40.0		93.1	50-150			
Surrogate: M6PFDA	40.1		ng/L	40.0		100	50-150			
Surrogate: M3PFBS	35.5		ng/L	37.3		95.3	50-150			
Surrogate: M7PFUnA	35.9		ng/L	40.0		89.8	50-150			
Surrogate: M2-6:2FTS	29.8		ng/L	38.0		78.2	50-150			
Surrogate: M5PFPeA	41.0		ng/L	40.0		102	50-150			
Surrogate: M5PFHxA	37.5		ng/L	40.0		93.8	50-150			
Surrogate: M3PFHxS	37.0		ng/L	37.9		97.6	50-150			
Surrogate: M4PFHpA	38.1		ng/L	40.0		95.4	50-150			
Surrogate: M8PFOA	40.2		ng/L	40.0		100	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
Blank (B279942-BLK1)

Prepared: 04/14/21 Analyzed: 04/17/21

Surrogate: M8PFOS	36.5		ng/L	38.3		95.3	50-150			
Surrogate: M9PFNA	39.2		ng/L	40.0		97.9	50-150			
Surrogate: MPFDoA	32.5		ng/L	40.0		81.1	50-150			
Surrogate: d5-NEtFOSAA	34.3		ng/L	40.0		85.7	50-150			
Surrogate: d3-NMeFOSAA	34.6		ng/L	40.0		86.5	50-150			

LCs (B279942-BS1)

Prepared: 04/14/21 Analyzed: 04/17/21

Perfluorobutanoic acid (PFBA)	2.35	2.0	ng/L	2.00		117	73-129			
Perfluorobutanesulfonic acid (PFBS)	1.52	2.0	ng/L	1.77		85.7	72-130			J
Perfluoropentanoic acid (PFPeA)	1.76	2.0	ng/L	2.00		88.0	72-129			J
Perfluorohexanoic acid (PFHxA)	1.65	2.0	ng/L	2.00		82.5	72-129			J
11Cl-PF3OUdS (F53B Major)	1.35	2.0	ng/L	1.89		71.7	50-150			J
9Cl-PF3ONS (F53B Minor)	1.37	2.0	ng/L	1.90		72.0	50-150			J
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	1.43	2.0	ng/L	1.89		75.8	50-150			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.34	2.0	ng/L	2.00		67.2	50-150			J
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.10	2.0	ng/L	1.92		109	67-138			
Perfluorodecanoic acid (PFDA)	1.52	2.0	ng/L	2.00		76.2	71-129			J
Perfluorododecanoic acid (PFDoA)	1.53	2.0	ng/L	2.00		76.3	72-134			J
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.51	2.0	ng/L	1.78		84.9	50-150			J
Perfluoroheptanesulfonic acid (PFHpS)	1.82	2.0	ng/L	1.91		95.4	69-134			J
N-EtFOSAA	1.76	2.0	ng/L	2.00		88.1	61-135			J
N-MeFOSAA	2.01	2.0	ng/L	2.00		101	65-136			
Perfluorotetradecanoic acid (PFTA)	1.59	2.0	ng/L	2.00		79.3	71-132			J
Perfluorotridecanoic acid (PFTrDA)	1.61	2.0	ng/L	2.00		80.4	65-144			J
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.77	2.0	ng/L	1.87		94.2	63-143			J
Perfluorodecanesulfonic acid (PFDS)	1.75	2.0	ng/L	1.93		90.9	53-142			J
Perfluorooctanesulfonamide (FOSA)	1.60	2.0	ng/L	2.00		80.0	67-137			J
Perfluorononanesulfonic acid (PFNS)	1.68	2.0	ng/L	1.92		87.1	69-127			J
Perfluoro-1-hexanesulfonamide (FHxSA)	1.51	2.0	ng/L	2.00		75.5	50-150			J
Perfluoro-1-butanefulfonamide (FBSA)	1.84	2.0	ng/L	2.00		91.8	50-150			J
Perfluorohexanesulfonic acid (PFHxS)	1.45	2.0	ng/L	1.83		79.5	68-131			J
Perfluoro-4-oxapentanoic acid (PFMPA)	1.88	2.0	ng/L	2.00		94.2	50-150			J
Perfluoro-5-oxahexanoic acid (PFMBA)	2.16	2.0	ng/L	2.00		108	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.80	2.0	ng/L	1.90		94.7	64-140			J
Perfluoropentanesulfonic acid (PFPeS)	1.41	2.0	ng/L	1.88		75.1	71-127			J
Perfluoroundecanoic acid (PFUnA)	1.50	2.0	ng/L	2.00		75.1	69-133			J
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	1.92	2.0	ng/L	2.00		96.1	50-150			J
Perfluoroheptanoic acid (PFHpA)	1.47	2.0	ng/L	2.00		73.3	72-130			J
Perfluorooctanoic acid (PFOA)	1.71	2.0	ng/L	2.00		85.5	71-133			J
Perfluorooctanesulfonic acid (PFOS)	1.58	2.0	ng/L	1.86		85.1	65-140			J
Perfluorononanoic acid (PFNA)	1.70	2.0	ng/L	2.00		85.0	69-130			J
Surrogate: M8FOSA	33.1		ng/L	40.0		82.7	50-150			
Surrogate: M2-4:2FTS	27.9		ng/L	37.5		74.3	50-150			
Surrogate: M2PFTA	32.0		ng/L	40.0		80.0	50-150			
Surrogate: M2-8:2FTS	28.6		ng/L	38.4		74.4	50-150			
Surrogate: MPFBA	37.3		ng/L	40.0		93.3	50-150			
Surrogate: M3HFPO-DA	37.5		ng/L	40.0		93.7	50-150			
Surrogate: M6PFDA	38.1		ng/L	40.0		95.2	50-150			
Surrogate: M3PFBS	32.6		ng/L	37.3		87.4	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B279942 - SOP 454-PFAAS
LCS (B279942-BS1)

Prepared: 04/14/21 Analyzed: 04/17/21

Surrogate: M7PFUnA	35.7		ng/L	40.0		89.3	50-150			
Surrogate: M2-6:2FTS	27.1		ng/L	38.0		71.2	50-150			
Surrogate: M5PFPeA	38.5		ng/L	40.0		96.2	50-150			
Surrogate: M5PFHxA	34.8		ng/L	40.0		87.0	50-150			
Surrogate: M3PFHxS	35.1		ng/L	37.9		92.5	50-150			
Surrogate: M4PFHpA	36.9		ng/L	40.0		92.3	50-150			
Surrogate: M8PFOA	38.6		ng/L	40.0		96.6	50-150			
Surrogate: M8PFOS	36.3		ng/L	38.3		94.7	50-150			
Surrogate: M9PFNA	36.4		ng/L	40.0		91.0	50-150			
Surrogate: MPFDoA	33.9		ng/L	40.0		84.8	50-150			
Surrogate: d5-NEtFOSAA	32.0		ng/L	40.0		80.1	50-150			
Surrogate: d3-NMeFOSAA	31.7		ng/L	40.0		79.2	50-150			

Batch B279944 - SOP 454-PFAAS
Blank (B279944-BLK1)

Prepared: 04/13/21 Analyzed: 04/16/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanessulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B279944 - SOP 454-PFAAS
Blank (B279944-BLK1)

Prepared: 04/13/21 Analyzed: 04/16/21

Surrogate: M8FOSA	32.9		ng/L	40.0		82.2	50-150			
Surrogate: M2-4:2FTS	32.9		ng/L	37.5		87.6	50-150			
Surrogate: M2PFTA	13.7		ng/L	40.0		34.1	* 50-150			PF-02A
Surrogate: M2-8:2FTS	32.8		ng/L	38.4		85.3	50-150			
Surrogate: MPFBA	39.5		ng/L	40.0		98.8	50-150			
Surrogate: M3HFPO-DA	38.7		ng/L	40.0		96.7	50-150			
Surrogate: M6PFDA	38.6		ng/L	40.0		96.5	50-150			
Surrogate: M3PFBS	37.0		ng/L	37.3		99.3	50-150			
Surrogate: M7PFUnA	35.3		ng/L	40.0		88.2	50-150			
Surrogate: M2-6:2FTS	33.8		ng/L	38.0		88.8	50-150			
Surrogate: M5PFPeA	39.5		ng/L	40.0		98.7	50-150			
Surrogate: M5PFHxA	37.5		ng/L	40.0		93.7	50-150			
Surrogate: M3PFHxS	39.9		ng/L	37.9		105	50-150			
Surrogate: M4PFHpA	39.7		ng/L	40.0		99.2	50-150			
Surrogate: M8PFOA	41.2		ng/L	40.0		103	50-150			
Surrogate: M8PFOS	38.1		ng/L	38.3		99.5	50-150			
Surrogate: M9PFNA	38.4		ng/L	40.0		95.9	50-150			
Surrogate: MPFDoA	29.7		ng/L	40.0		74.2	50-150			
Surrogate: d5-NEtFOSAA	33.1		ng/L	40.0		82.8	50-150			
Surrogate: d3-NMeFOSAA	33.8		ng/L	40.0		84.5	50-150			

LCS (B279944-BS1)

Prepared: 04/13/21 Analyzed: 04/16/21

Perfluorobutanoic acid (PFBA)	8.12	2.0	ng/L	10.0		81.2	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.18	2.0	ng/L	8.87		80.9	72-130			
Perfluoropentanoic acid (PFPeA)	8.30	2.0	ng/L	10.0		83.0	72-129			
Perfluorohexanoic acid (PFHxA)	7.52	2.0	ng/L	10.0		75.2	72-129			
11Cl-PF3OUdS (F53B Major)	7.10	2.0	ng/L	9.43		75.3	50-150			
9Cl-PF3ONS (F53B Minor)	7.45	2.0	ng/L	9.51		78.4	50-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.21	2.0	ng/L	9.45		76.3	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.91	2.0	ng/L	10.0		89.1	50-150			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.54	2.0	ng/L	9.60		88.9	67-138			
Perfluorodecanoic acid (PFDA)	7.69	2.0	ng/L	10.0		76.9	71-129			
Perfluorododecanoic acid (PFDoA)	7.63	2.0	ng/L	10.0		76.3	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	7.38	2.0	ng/L	8.90		82.9	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	8.15	2.0	ng/L	9.53		85.5	69-134			
N-EtFOSAA	8.71	2.0	ng/L	10.0		87.1	61-135			
N-MeFOSAA	9.52	2.0	ng/L	10.0		95.2	65-136			
Perfluorotetradecanoic acid (PFTA)	7.82	2.0	ng/L	10.0		78.2	71-132			
Perfluorotridecanoic acid (PFTrDA)	7.98	2.0	ng/L	10.0		79.8	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.94	2.0	ng/L	9.37		95.4	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.23	2.0	ng/L	9.65		74.9	53-142			
Perfluorooctanesulfonamide (FOSA)	8.45	2.0	ng/L	10.0		84.5	67-137			
Perfluorononanesulfonic acid (PFNS)	8.25	2.0	ng/L	9.62		85.8	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	7.38	2.0	ng/L	10.0		73.8	50-150			
Perfluoro-1-butanesulfonamide (FBSA)	8.37	2.0	ng/L	10.0		83.7	50-150			
Perfluorohexanesulfonic acid (PFHxS)	6.95	2.0	ng/L	9.14		76.1	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.59	2.0	ng/L	10.0		85.9	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.49	2.0	ng/L	10.0		94.9	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.11	2.0	ng/L	9.51		85.3	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.28	2.0	ng/L	9.41		77.4	71-127			
Perfluoroundecanoic acid (PFUnA)	8.15	2.0	ng/L	10.0		81.5	69-133			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B279944 - SOP 454-PFAAS										
LCS (B279944-BS1)										
Prepared: 04/13/21 Analyzed: 04/16/21										
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.83	2.0	ng/L	10.0		88.3	50-150			
Perfluoroheptanoic acid (PFHpA)	7.76	2.0	ng/L	10.0		77.6	72-130			
Perfluorooctanoic acid (PFOA)	8.22	2.0	ng/L	10.0		82.2	71-133			
Perfluorooctanesulfonic acid (PFOS)	7.42	2.0	ng/L	9.28		80.0	65-140			
Perfluorononanoic acid (PFNA)	7.88	2.0	ng/L	10.0		78.8	69-130			
Surrogate: M8FOSA	31.1		ng/L	40.0		77.8	50-150			
Surrogate: M2-4:2FTS	33.5		ng/L	37.5		89.2	50-150			
Surrogate: M2PFTA	36.1		ng/L	40.0		90.4	50-150			
Surrogate: M2-8:2FTS	34.4		ng/L	38.4		89.6	50-150			
Surrogate: MPFBA	38.4		ng/L	40.0		96.1	50-150			
Surrogate: M3HFPO-DA	36.9		ng/L	40.0		92.2	50-150			
Surrogate: M6PFDA	40.8		ng/L	40.0		102	50-150			
Surrogate: M3PFBS	36.0		ng/L	37.3		96.6	50-150			
Surrogate: M7PFUnA	38.9		ng/L	40.0		97.4	50-150			
Surrogate: M2-6:2FTS	32.1		ng/L	38.0		84.5	50-150			
Surrogate: M5PFPeA	38.7		ng/L	40.0		96.7	50-150			
Surrogate: M5PFHxA	38.3		ng/L	40.0		95.8	50-150			
Surrogate: M3PFHxS	37.1		ng/L	37.9		97.8	50-150			
Surrogate: M4PFHpA	38.9		ng/L	40.0		97.4	50-150			
Surrogate: M8PFOA	39.3		ng/L	40.0		98.3	50-150			
Surrogate: M8PFOS	33.9		ng/L	38.3		93.7	50-150			
Surrogate: M9PFNA	39.1		ng/L	40.0		97.7	50-150			
Surrogate: MPFDoA	36.7		ng/L	40.0		91.8	50-150			
Surrogate: d5-NEtFOSAA	35.2		ng/L	40.0		88.1	50-150			
Surrogate: d3-NMeFOSAA	35.4		ng/L	40.0		88.5	50-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-02A	Surrogate recovery is outside of control limits. Re-analysis yielded similar surrogate non-conformance.

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2021
ME	State of Maine	MA00100	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2021
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

21C1176



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

<http://www.contestlabs.com>

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

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CHAIN OF CUSTODY RECORD

ANALYSIS REQUESTED

Company Name: **Horsley Witten Group**
Address: **90 Rte 6A Unit 1 Sandwich, MA**
Phone: **(781) 243-1527**
Project Name: **HVA**
Project Location: **Hyannis**
Project Number: **20102**
Project Manager: **Bryan Massa**
Con-Test Quote Name/Number:
Invoice Recipient: **Bryan Massa**
Sampled By: **HW**

Requested Turnaround Time		Dispersed Matrix Samples	
7-Day <input type="checkbox"/>	10-Day <input type="checkbox"/>	<input type="radio"/> Field Filtered	
PFAS 10-Day (std) <input checked="" type="checkbox"/>	Due Date:	<input type="radio"/> Lab to Filter	
Rush Approval Required		Orthophosphate Samples	
1-Day <input type="checkbox"/>	3-Day <input type="checkbox"/>	<input type="radio"/> Field Filtered	
2-Day <input type="checkbox"/>	4-Day <input type="checkbox"/>	<input type="radio"/> Lab to Filter	
Data Delivery			
Format:		PDF <input checked="" type="checkbox"/>	EXCEL <input checked="" type="checkbox"/>
Other:			
CLP Like Data Pkg Required: <input type="checkbox"/>			
Email To:		bmassa@horsleywitten.com	
Fax To #:			

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
1	HW-R(S)	3/17	11:55	Grab	GW				✓		
2	HW-J	3/17	12:50						✓		
3	HW-I(S)	3/17	13:40						✓		
4	HW-I(m)	3/17	14:10						✓		
5	HW-I(d)	3/17	14:35						✓		
6	HW-E	3/17	15:10						✓		
7	HW-F	3/17	15:35						✓		
8	HW-30Z	3/17	16:30						✓		
9	HW-Z	3/17	13:40						✓		
10	HW-3	3/17	15:00	✓	✓				✓		

Relinquished by: (signature) *[Signature]* Date/Time: 3/28 13:00
Client Comments: **MA MCP**

Received by: (signature) *[Signature]* Date/Time: 3/28 13:00
Client Comments: **GW-1**

Relinquished by: (signature) *[Signature]* Date/Time: 3/28 17:41

Received by: (signature) *[Signature]* Date/Time: 4-8 3/30 17:31

Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time:

Relinquished by: (signature) Date/Time:

Received by: (signature) Date/Time:

Field Blank not to be run, per client request - RJM 3/25/2021

Comments:

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

² Preservation Code	
Account ID Only	
Total Number Of:	
VIALS	
GLASS	
PLASTIC	
BACTERIA	
ENCORE	
Glassware in the fridge? Y / N	
Glassware in freezer? Y / N	
Prepackaged Cooler? Y / N	
*Contest is not responsible for missing samples from prepacked coolers	
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)	
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	
NELAC and AIHA-LAP, LLC Accredited	
Other	
<input type="checkbox"/> Chromatogram	<input type="checkbox"/> PCB ONLY
<input type="checkbox"/> AIHA-LAP, LLC	<input type="checkbox"/> Soxhlet
	<input type="checkbox"/> Non Soxhlet

[illegible]

Disclaimer: Con-Test Labs is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Con-Test values your partnership on each project and will try to assist with missing information, but will not be held accountable.

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley Winton

Received By en

Date 3/23/21

Time 1731

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 2 Actual Temp - 4.8
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T
pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? N/A MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	<u>43</u>	4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		


Comments:

CERTIFICATE OF ANALYSIS

Bryan Massa
Horsley & Witten
90 Route 6A
Sandwich, MA 02563

RE: Barnstable Airport (20102)
ESS Laboratory Work Order Number: 21D0199

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 3:24 pm, Apr 14, 2021

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

SAMPLE RECEIPT

The following samples were received on April 07, 2021 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
21D0199-01	HW-W dd 3-5 ft	Soil	9060
21D0199-02	HW-W dd 8-10 ft	Soil	9060
21D0199-03	HW-W dd 18-20 ft	Soil	9060
21D0199-04	HW-W dd 23-25 ft	Soil	9060
21D0199-05	HW-W dd 28-30 ft	Soil	9060
21D0199-06	HW-W dd 33-35 ft	Soil	9060
21D0199-07	HW-W dd 38-40 ft	Soil	9060
21D0199-08	HW-W dd 43-45 ft	Soil	9060
21D0199-09	HW-W dd 48-50 ft	Soil	9060
21D0199-10	HW-W dd 58-60 ft	Soil	9060
21D0199-11	HW-W dd 63-65 ft	Soil	9060



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

Classical Chemistry

Client Sample ID: HW-W dd 3-5 ft
Date Sampled: 04/06/21 10:35
Percent Solids: 97

ESS Laboratory Sample ID: 21D0199-01
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	94.8	9060	1	CCP	04/12/21 17:22

Client Sample ID: HW-W dd 8-10 ft
Date Sampled: 04/06/21 10:45
Percent Solids: 90

ESS Laboratory Sample ID: 21D0199-02
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	94.3	9060	1	CCP	04/12/21 17:38

Client Sample ID: HW-W dd 18-20 ft
Date Sampled: 04/06/21 10:55
Percent Solids: 96

ESS Laboratory Sample ID: 21D0199-03
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	96.5	9060	1	CCP	04/12/21 17:55

Client Sample ID: HW-W dd 23-25 ft
Date Sampled: 04/06/21 11:04
Percent Solids: 96

ESS Laboratory Sample ID: 21D0199-04
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	93.9	9060	1	CCP	04/12/21 18:12



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

Classical Chemistry

Client Sample ID: HW-W dd 28-30 ft
Date Sampled: 04/06/21 11:13
Percent Solids: 84

ESS Laboratory Sample ID: 21D0199-05
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	95.7	9060	1	CCP	04/12/21 18:30

Client Sample ID: HW-W dd 33-35 ft
Date Sampled: 04/06/21 11:30
Percent Solids: 82

ESS Laboratory Sample ID: 21D0199-06
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	93.5	9060	1	CCP	04/12/21 19:20

Client Sample ID: HW-W dd 38-40 ft
Date Sampled: 04/06/21 13:10
Percent Solids: 84

ESS Laboratory Sample ID: 21D0199-07
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	96.9	9060	1	CCP	04/12/21 19:39

Client Sample ID: HW-W dd 43-45 ft
Date Sampled: 04/06/21 13:15
Percent Solids: 80

ESS Laboratory Sample ID: 21D0199-08
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	95.7	9060	1	CCP	04/12/21 19:55



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

Classical Chemistry

Client Sample ID: HW-W dd 48-50 ft
Date Sampled: 04/06/21 13:30
Percent Solids: 80

ESS Laboratory Sample ID: 21D0199-09
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	95.7	9060	1	CCP	04/12/21 20:12

Client Sample ID: HW-W dd 58-60 ft
Date Sampled: 04/06/21 13:50
Percent Solids: 86

ESS Laboratory Sample ID: 21D0199-10
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	94.2	9060	1	CCP	04/12/21 20:29

Client Sample ID: HW-W dd 63-65 ft
Date Sampled: 04/06/21 14:10
Percent Solids: 79

ESS Laboratory Sample ID: 21D0199-11
Sample Matrix: Soil

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>
Total Organic Carbon (Average)	ND	mg/kg dry	95.7	9060	1	CCP	04/12/21 21:41



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Classical Chemistry

Batch DD10758 - General Preparation

Blank

Total Organic Carbon (1)	ND	100	mg/kg
Total Organic Carbon (2)	ND	100	mg/kg

LCS

Total Organic Carbon (1)	9230	100	mg/kg	10000	92	80-120
Total Organic Carbon (2)	9440	100	mg/kg	10000	94	80-120

LCS Dup

Total Organic Carbon (1)	9630	100	mg/kg	10000	96	80-120	4	20
Total Organic Carbon (2)	9320	100	mg/kg	10000	93	80-120	1	20



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0199

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/meedc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

CERTIFICATE OF ANALYSIS

Bryan Massa
Horsley & Witten
90 Route 6A
Sandwich, MA 02563

RE: Barnstable Airport (20102)
ESS Laboratory Work Order Number: 21D0671

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED*By ESS Laboratory at 5:09 pm, Apr 26, 2021***Analytical Summary**

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

SAMPLE RECEIPT

The following samples were received on April 20, 2021 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
21D0671-01	S1 0-2 ft	Soil	9060
21D0671-02	S1 2-4 ft	Soil	9060
21D0671-03	S1 4-6 ft	Soil	9060
21D0671-04	S2 0-2 ft	Soil	9060
21D0671-05	S2 2-4 ft	Soil	9060
21D0671-06	S2 4-6 ft	Soil	9060



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S1 0-2 ft
Date Sampled: 04/19/21 10:28
Percent Solids: 88

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	28900 (95.0)		9060		1	ZZZ	04/22/21 13:56	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S1 2-4 ft
Date Sampled: 04/19/21 12:33
Percent Solids: 96

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	1150 (92.5)		9060		1	ZZZ	04/22/21 16:34	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S1 4-6 ft
Date Sampled: 04/19/21 13:10
Percent Solids: 97

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	180 (95.5)		9060		1	ZZZ	04/22/21 15:02	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S2 0-2 ft
Date Sampled: 04/19/21 13:30
Percent Solids: 92

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-04
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	1550 (94.4)		9060		1	ZZZ	04/22/21 15:19	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S2 2-4 ft
Date Sampled: 04/19/21 13:40
Percent Solids: 97

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-05
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	ND (95.1)		9060		1	ZZZ	04/22/21 15:36	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport
Client Sample ID: S2 4-6 ft
Date Sampled: 04/19/21 13:45
Percent Solids: 86

ESS Laboratory Work Order: 21D0671
ESS Laboratory Sample ID: 21D0671-06
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	3500 (91.8)		9060		1	ZZZ	04/22/21 15:52	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Classical Chemistry

Batch DD12038 - General Preparation

Blank

Total Organic Carbon (1)	ND	100	mg/kg							
Total Organic Carbon (2)	ND	100	mg/kg							

LCS

Total Organic Carbon (1)	9340	100	mg/kg	10000		93	80-120			
Total Organic Carbon (2)	9020	100	mg/kg	10000		90	80-120			

LCS Dup

Total Organic Carbon (1)	9330	100	mg/kg	10000		93	80-120	0.04	20	
Total Organic Carbon (2)	9270	100	mg/kg	10000		93	80-120	3	20	



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Barnstable Airport

ESS Laboratory Work Order: 21D0671

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/meedc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group - KPB
 Shipped/Delivered Via: ESS Courier

ESS Project ID: 21D0671
 Date Received: 4/20/2021
 Project Due Date: 4/27/2021
 Days for Project: 5 Day

1. Air bill manifest present? ☒ No
 Air No.: NA
2. Were custody seals present? ☒ No
3. Is radiation count <100 CPM? ☒ Yes
4. Is a Cooler Present? ☒ Yes
 Temp: 1.2 Iced with: Ice
5. Was COC signed and dated by client? ☒ Yes

6. Does COC match bottles? ☒ Yes
7. Is COC complete and correct? ☒ Yes
8. Were samples received intact? ☒ Yes
9. Were labs informed about short holds & rushes? Yes / No / ☒ NA
10. Were any analyses received outside of hold time? Yes / ☒ No

11. Any Subcontracting needed? Yes / ☒ No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes / ☒ No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? ☒ Yes / No
 a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
 b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / ☒ No
 a. Was there a need to contact the client? Yes / ☒ No
 Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	156537	Yes	N/A	Yes	2 oz. Jar	NP	
2	156538	Yes	N/A	Yes	2 oz. Jar	NP	
3	156539	Yes	N/A	Yes	2 oz. Jar	NP	
4	156540	Yes	N/A	Yes	2 oz. Jar	NP	
5	156541	Yes	N/A	Yes	2 oz. Jar	NP	
6	156542	Yes	N/A	Yes	2 oz. Jar	NP	

2nd Review

Were all containers scanned into storage/lab?

Are barcode labels on correct containers?

Are all Flashpoint stickers attached/container ID # circled?

Are all Hex Chrome stickers attached?

Are all QC stickers attached?

Are VOA stickers attached if bubbles noted?

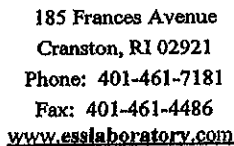
Initials AG

☒ Yes / No
☒ Yes / No / NA
☒ Yes / No / NA
☒ Yes / No / NA
☒ Yes / No / NA

Completed

ESS Laboratory Sample and Cooler Receipt Checklist

Client:	Horsley Witten Group - KPB	ESS Project ID:	21D0671
By:	<u>Amber Gavin</u>	Date Received:	4/20/2021
Reviewed		Date & Time:	4/20/21 16:12
By:	<u>DS</u>	Date & Time:	4/20/21 16:15



ESS Lab # 2100671	Page 1 of 1
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ELECTRONIC DELIVERABLES (Final Reports are PDF)

☐ Limit Checker ☐ State Forms ☐ EQuIS
☒ Excel ☐ Hard Copy ☐ Enviro Data
☐ CLP-Like Package ☐ Other (Specify) →

REQUESTED ANALYSES

Client acknowledges that sampling is compliant with all EPA / State regulatory programs

Total Number of Bottle

[illegible]

Chain needs to be filled out neatly and completely for on time delivery.

Comments: * Please specify "Other" preservative and containers types in this space

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration

☐ Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

May 4, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21D1020

Enclosed are results of analyses for samples received by the laboratory on April 20, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Raymond J. McCarthy
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 5/4/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 21D1020

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
OW-W (m)	21D1020-01	Ground Water		SOP-454 PFAS	
OW-W (d)	21D1020-02	Ground Water		SOP-454 PFAS	
OW-W (dd)	21D1020-03	Ground Water		SOP-454 PFAS	
HW-U (s)	21D1020-04	Ground Water		SOP-454 PFAS	
HW-U (m)	21D1020-05	Ground Water		SOP-454 PFAS	

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

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:**

PF-05

Opening calibration verification was within control criteria. Closing calibration verification was outside of criteria and biased on the low side. Re-analysis yielded similar non-conformance.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

S059260-CCV2

N-EtFOSAA

S059260-CCV2

N-MeFOSAA

S059260-CCV2

Perfluoro-1-butanesulfonamide (F1

S059260-CCV2

Perfluorodecanesulfonic acid (PFD

S059260-CCV2

Perfluorooctanesulfonamide (FOS;S059260-CCV2

PF-06

Opening calibration verification was within control criteria. Closing calibration verification was outside of criteria and biased on the high side. Re-analysis yielded similar non-conformance.

Analyte & Samples(s) Qualified:**M2-4:2FTS**

S059260-CCV2

M3PFBS

S059260-CCV2

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (m)

Sampled: 4/19/2021 10:45

Sample ID: 21D1020-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	7.1	2.0	0.57	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorobutanesulfonic acid (PFBS)	0.60	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoropentanoic acid (PFPeA)	21	2.0	0.66	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorohexanoic acid (PFHxA)	12	2.0	0.75	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorooctanesulfonamide (FOSA)	40	2.0	0.44	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	0.72	2.0	0.70	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorohexanesulfonic acid (PFHxS)	12	2.0	0.58	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluoroheptanoic acid (PFHpA)	5.2	2.0	0.62	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorooctanoic acid (PFOA)	4.1	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorooctanesulfonic acid (PFOS)	75	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC
Perfluorononanoic acid (PFNA)	0.77	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 7:10	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	86.1	50-150	5/3/21 7:10
M2-4:2FTS	80.1	50-150	5/3/21 7:10
M2PFTA	85.1	50-150	5/3/21 7:10
M2-8:2FTS	77.3	50-150	5/3/21 7:10
MPFBA	97.3	50-150	5/3/21 7:10
M3HFPO-DA	102	50-150	5/3/21 7:10
M6PFDA	96.1	50-150	5/3/21 7:10
M3PFBS	102	50-150	5/3/21 7:10

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (m)

Sampled: 4/19/2021 10:45

Sample ID: 21D1020-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	95.6		50-150				5/3/21 7:10			
M2-6:2FTS	83.2		50-150				5/3/21 7:10			
M5PFPeA	102		50-150				5/3/21 7:10			
M5PFHxA	96.1		50-150				5/3/21 7:10			
M3PFHxS	101		50-150				5/3/21 7:10			
M4PFHpA	99.3		50-150				5/3/21 7:10			
M8PFOA	98.0		50-150				5/3/21 7:10			
M8PFOS	96.1		50-150				5/3/21 7:10			
M9PFNA	95.1		50-150				5/3/21 7:10			
MPFDoA	88.4		50-150				5/3/21 7:10			
d5-NEtFOSAA	91.9		50-150				5/3/21 7:10			
d3-NMeFOSAA	77.5		50-150				5/3/21 7:10			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (d)

Sampled: 4/19/2021 11:30

Sample ID: 21D1020-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.4	2.0	0.57	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorobutanesulfonic acid (PFBS)	0.39	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoropentanoic acid (PFPeA)	7.5	2.0	0.66	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorohexanoic acid (PFHxA)	5.0	2.0	0.75	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorohexanesulfonic acid (PFHxS)	8.8	2.0	0.58	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluoroheptanoic acid (PFHpA)	2.1	2.0	0.62	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorooctanoic acid (PFOA)	2.9	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorooctanesulfonic acid (PFOS)	12	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC
Perfluorononanoic acid (PFNA)	1.3	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 7:40	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	90.7	50-150	
M2-4:2FTS	79.4	50-150	
M2PFTA	92.9	50-150	
M2-8:2FTS	89.5	50-150	
MPFBA	95.3	50-150	
M3HFPO-DA	103	50-150	
M6PFDA	99.1	50-150	
M3PFBS	106	50-150	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (d)

Sampled: 4/19/2021 11:30

Sample ID: 21D1020-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	96.7		50-150				5/3/21 7:40			
M2-6:2FTS	89.1		50-150				5/3/21 7:40			
M5PFPeA	98.9		50-150				5/3/21 7:40			
M5PFHxA	99.5		50-150				5/3/21 7:40			
M3PFHxS	101		50-150				5/3/21 7:40			
M4PFHpA	97.1		50-150				5/3/21 7:40			
M8PFOA	101		50-150				5/3/21 7:40			
M8PFOS	100		50-150				5/3/21 7:40			
M9PFNA	99.2		50-150				5/3/21 7:40			
MPFDoA	94.0		50-150				5/3/21 7:40			
d5-NEtFOSAA	97.8		50-150				5/3/21 7:40			
d3-NMeFOSAA	87.3		50-150				5/3/21 7:40			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (dd)

Sampled: 4/19/2021 12:45

Sample ID: 21D1020-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	9.6	2.0	0.57	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorobutanesulfonic acid (PFBS)	0.39	2.0	0.32	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoropentanoic acid (PFPeA)	33	2.0	0.66	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorohexanoic acid (PFHxA)	23	2.0	0.75	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorohexanesulfonic acid (PFHxS)	8.6	2.0	0.58	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluoroheptanoic acid (PFHpA)	9.1	2.0	0.62	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorooctanoic acid (PFOA)	4.6	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorooctanesulfonic acid (PFOS)	15	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC
Perfluorononanoic acid (PFNA)	1.4	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 8:09	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	92.8	50-150	5/3/21 8:09
M2-4:2FTS	78.2	50-150	5/3/21 8:09
M2PFTA	89.6	50-150	5/3/21 8:09
M2-8:2FTS	89.2	50-150	5/3/21 8:09
MPFBA	98.2	50-150	5/3/21 8:09
M3HFPO-DA	104	50-150	5/3/21 8:09
M6PFDA	99.1	50-150	5/3/21 8:09
M3PFBS	103	50-150	5/3/21 8:09

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: OW-W (dd)

Sampled: 4/19/2021 12:45

Sample ID: 21D1020-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	95.6		50-150				5/3/21 8:09			
M2-6:2FTS	84.8		50-150				5/3/21 8:09			
M5PFPeA	102		50-150				5/3/21 8:09			
M5PFHxA	101		50-150				5/3/21 8:09			
M3PFHxS	97.0		50-150				5/3/21 8:09			
M4PFHpA	97.9		50-150				5/3/21 8:09			
M8PFOA	100		50-150				5/3/21 8:09			
M8PFOS	93.7		50-150				5/3/21 8:09			
M9PFNA	96.9		50-150				5/3/21 8:09			
MPFDoA	92.3		50-150				5/3/21 8:09			
d5-NEtFOSAA	94.9		50-150				5/3/21 8:09			
d3-NMeFOSAA	92.0		50-150				5/3/21 8:09			

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: HW-U (s)

Sampled: 4/19/2021 13:30

Sample ID: 21D1020-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.0	2.0	0.57	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorobutanesulfonic acid (PFBS)	5.1	2.0	0.32	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoropentanoic acid (PFPeA)	2.9	2.0	0.66	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorohexanoic acid (PFHxA)	3.6	2.0	0.75	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorodecanoic acid (PFDA)	0.64	2.0	0.38	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.55	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorohexanesulfonic acid (PFHxS)	10	2.0	0.58	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluoroheptanoic acid (PFHpA)	2.0	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorooctanoic acid (PFOA)	7.5	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorooctanesulfonic acid (PFOS)	60	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC
Perfluorononanoic acid (PFNA)	1.3	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 8:39	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	91.8	50-150	
M2-4:2FTS	83.7	50-150	
M2PFTA	93.0	50-150	
M2-8:2FTS	85.2	50-150	
MPFBA	95.2	50-150	
M3HFPO-DA	104	50-150	
M6PFDA	99.4	50-150	
M3PFBS	105	50-150	

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Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: HW-U (s)

Sampled: 4/19/2021 13:30

Sample ID: 21D1020-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	98.6		50-150				5/3/21 8:39			
M2-6:2FTS	83.1		50-150				5/3/21 8:39			
M5PFPeA	99.3		50-150				5/3/21 8:39			
M5PFHxA	98.4		50-150				5/3/21 8:39			
M3PFHxS	102		50-150				5/3/21 8:39			
M4PFHpA	96.6		50-150				5/3/21 8:39			
M8PFOA	101		50-150				5/3/21 8:39			
M8PFOS	99.5		50-150				5/3/21 8:39			
M9PFNA	96.9		50-150				5/3/21 8:39			
MPFDoA	93.7		50-150				5/3/21 8:39			
d5-NEtFOSAA	96.2		50-150				5/3/21 8:39			
d3-NMeFOSAA	86.4		50-150				5/3/21 8:39			

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: HW-U (m)

Sampled: 4/19/2021 14:00

Sample ID: 21D1020-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.7	2.0	0.57	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorobutanesulfonic acid (PFBS)	2.6	2.0	0.32	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoropentanoic acid (PFPeA)	3.5	2.0	0.66	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorohexanoic acid (PFHxA)	2.9	2.0	0.75	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.54	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	1.6	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	1.4	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	1.3	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
N-EtFOSAA	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
N-MeFOSAA	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	1.2	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.89	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.79	2.0	0.55	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorohexanesulfonic acid (PFHxS)	4.3	2.0	0.58	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	1.1	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.51	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.53	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluoroheptanoic acid (PFHpA)	1.8	2.0	0.62	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorooctanoic acid (PFOA)	5.5	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorooctanesulfonic acid (PFOS)	9.3	2.0	0.38	ng/L	1		SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC
Perfluorononanoic acid (PFNA)	0.83	2.0	0.48	ng/L	1	J	SOP-454 PFAS	4/28/21	5/3/21 9:08	JFC

Surrogates	% Recovery	Recovery Limits	Flag/Qual
M8FOSA	92.7	50-150	5/3/21 9:08
M2-4:2FTS	78.4	50-150	5/3/21 9:08
M2PFTA	93.5	50-150	5/3/21 9:08
M2-8:2FTS	80.1	50-150	5/3/21 9:08
MPFBA	98.1	50-150	5/3/21 9:08
M3HFPO-DA	102	50-150	5/3/21 9:08
M6PFDA	98.1	50-150	5/3/21 9:08
M3PFBS	104	50-150	5/3/21 9:08

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 21D1020

Date Received: 4/20/2021

Field Sample #: HW-U (m)

Sampled: 4/19/2021 14:00

Sample ID: 21D1020-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
M7PFUnA	98.2		50-150					5/3/21	9:08	
M2-6:2FTS	84.1		50-150					5/3/21	9:08	
M5PFPeA	102		50-150					5/3/21	9:08	
M5PFHxA	99.1		50-150					5/3/21	9:08	
M3PFHxS	97.2		50-150					5/3/21	9:08	
M4PFHpA	97.3		50-150					5/3/21	9:08	
M8PFOA	98.3		50-150					5/3/21	9:08	
M8PFOS	95.9		50-150					5/3/21	9:08	
M9PFNA	99.7		50-150					5/3/21	9:08	
MPFDoA	94.1		50-150					5/3/21	9:08	
d5-NEtFOSAA	96.2		50-150					5/3/21	9:08	
d3-NMeFOSAA	88.4		50-150					5/3/21	9:08	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data****Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21D1020-01 [OW-W (m)]	B280315	250	1.00	04/28/21
21D1020-02 [OW-W (d)]	B280315	250	1.00	04/28/21
21D1020-03 [OW-W (dd)]	B280315	250	1.00	04/28/21
21D1020-04 [HW-U (s)]	B280315	250	1.00	04/28/21
21D1020-05 [HW-U (m)]	B280315	250	1.00	04/28/21

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B280315 - SOP 454-PFAAS
Blank (B280315-BLK1)

Prepared: 04/28/21 Analyzed: 05/03/21

Perfluorobutanoic acid (PFBA)	0.75	2.0	ng/L							J
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							
Surrogate: M8FOSA	35.1		ng/L	40.0		87.9	50-150			
Surrogate: M2-4:2FTS	32.1		ng/L	37.5		85.7	50-150			
Surrogate: M2PFTA	34.8		ng/L	40.0		87.0	50-150			
Surrogate: M2-8:2FTS	30.8		ng/L	38.4		80.2	50-150			
Surrogate: MPFBA	36.9		ng/L	40.0		92.2	50-150			
Surrogate: M3HFPO-DA	37.7		ng/L	40.0		94.2	50-150			
Surrogate: M6PFDA	38.0		ng/L	40.0		95.0	50-150			
Surrogate: M3PFBS	36.4		ng/L	37.3		97.5	50-150			
Surrogate: M7PFUnA	37.6		ng/L	40.0		94.1	50-150			
Surrogate: M2-6:2FTS	30.7		ng/L	38.0		80.7	50-150			
Surrogate: M5PFPeA	39.0		ng/L	40.0		97.4	50-150			
Surrogate: M5PFHxA	37.8		ng/L	40.0		94.5	50-150			
Surrogate: M3PFHxS	35.3		ng/L	37.9		93.2	50-150			
Surrogate: M4PFHpA	38.0		ng/L	40.0		95.0	50-150			
Surrogate: M8PFOA	37.6		ng/L	40.0		94.1	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B280315 - SOP 454-PFAAS
Blank (B280315-BLK1)

Prepared: 04/28/21 Analyzed: 05/03/21

Surrogate: M8PFOS	36.9		ng/L	38.4		96.1	50-150			
Surrogate: M9PFNA	38.1		ng/L	40.0		95.1	50-150			
Surrogate: MPFDoA	36.3		ng/L	40.0		90.7	50-150			
Surrogate: d5-NEtFOSAA	35.8		ng/L	40.0		89.4	50-150			
Surrogate: d3-NMeFOSAA	32.4		ng/L	40.0		81.0	50-150			

LCs (B280315-BS1)

Prepared: 04/28/21 Analyzed: 05/03/21

Perfluorobutanoic acid (PFBA)	21.4	2.0	ng/L	20.0		107	73-129			
Perfluorobutanesulfonic acid (PFBS)	18.0	2.0	ng/L	17.7		101	72-130			
Perfluoropentanoic acid (PFPeA)	19.6	2.0	ng/L	20.0		98.0	72-129			
Perfluorohexanoic acid (PFHxA)	21.0	2.0	ng/L	20.0		105	72-129			
11Cl-PF3OUdS (F53B Major)	19.6	2.0	ng/L	18.9		104	50-150			
9Cl-PF3ONS (F53B Minor)	19.7	2.0	ng/L	18.7		106	50-150			
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	18.7	2.0	ng/L	18.9		98.8	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	16.6	2.0	ng/L	20.0		83.0	50-150			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	21.4	2.0	ng/L	19.2		112	67-138			
Perfluorodecanoic acid (PFDA)	20.3	2.0	ng/L	20.0		102	71-129			
Perfluorododecanoic acid (PFDoA)	20.7	2.0	ng/L	20.0		103	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	18.1	2.0	ng/L	17.8		102	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	18.8	2.0	ng/L	19.1		98.9	69-134			
N-EtFOSAA	21.4	2.0	ng/L	20.0		107	61-135			
N-MeFOSAA	20.6	2.0	ng/L	20.0		103	65-136			
Perfluorotetradecanoic acid (PFTA)	20.2	2.0	ng/L	20.0		101	71-132			
Perfluorotridecanoic acid (PFTrDA)	20.5	2.0	ng/L	20.0		102	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	21.4	2.0	ng/L	18.7		114	63-143			
Perfluorodecanesulfonic acid (PFDS)	19.2	2.0	ng/L	19.3		99.6	53-142			
Perfluorooctanesulfonamide (FOSA)	20.3	2.0	ng/L	20.0		101	67-137			
Perfluorononanesulfonic acid (PFNS)	19.8	2.0	ng/L	19.2		103	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	18.9	2.0	ng/L	20.0		94.6	50-150			
Perfluoro-1-butanessulfonamide (FBSA)	20.4	2.0	ng/L	20.0		102	50-150			
Perfluorohexanesulfonic acid (PFHxS)	18.2	2.0	ng/L	18.3		99.7	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	22.1	2.0	ng/L	20.0		110	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	19.5	2.0	ng/L	20.0		97.4	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	20.2	2.0	ng/L	19.0		106	64-140			
Perfluoropentanesulfonic acid (PFPeS)	18.4	2.0	ng/L	18.8		97.7	71-127			
Perfluoroundecanoic acid (PFUnA)	20.7	2.0	ng/L	20.0		103	69-133			
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	20.1	2.0	ng/L	20.0		100	50-150			
Perfluoroheptanoic acid (PFHpA)	20.2	2.0	ng/L	20.0		101	72-130			
Perfluorooctanoic acid (PFOA)	21.3	2.0	ng/L	20.0		106	71-133			
Perfluorooctanesulfonic acid (PFOS)	18.5	2.0	ng/L	18.6		99.6	65-140			
Perfluorononanoic acid (PFNA)	19.7	2.0	ng/L	20.0		98.6	69-130			
Surrogate: M8FOSA	37.5		ng/L	40.0		93.9	50-150			
Surrogate: M2-4:2FTS	36.2		ng/L	37.5		96.5	50-150			
Surrogate: M2PFTA	35.0		ng/L	40.0		87.6	50-150			
Surrogate: M2-8:2FTS	38.4		ng/L	38.4		100	50-150			
Surrogate: MPFBA	37.6		ng/L	40.0		93.9	50-150			
Surrogate: M3HFPO-DA	42.5		ng/L	40.0		106	50-150			
Surrogate: M6PFDA	38.4		ng/L	40.0		96.0	50-150			
Surrogate: M3PFBS	37.4		ng/L	37.3		100	50-150			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B280315 - SOP 454-PFAAS
LCS (B280315-BS1)

Prepared: 04/28/21 Analyzed: 05/03/21

Surrogate: M7PFUnA	37.3		ng/L	40.0		93.3	50-150			
Surrogate: M2-6:2FTS	37.4		ng/L	38.0		98.2	50-150			
Surrogate: M5PFPeA	40.5		ng/L	40.0		101	50-150			
Surrogate: M5PFHxA	38.5		ng/L	40.0		96.3	50-150			
Surrogate: M3PFHxS	37.1		ng/L	37.9		97.8	50-150			
Surrogate: M4PFHpA	38.6		ng/L	40.0		96.6	50-150			
Surrogate: M8PFOA	38.4		ng/L	40.0		96.1	50-150			
Surrogate: M8PFOS	36.6		ng/L	38.4		95.5	50-150			
Surrogate: M9PFNA	38.6		ng/L	40.0		96.5	50-150			
Surrogate: MPFDoA	36.3		ng/L	40.0		90.7	50-150			
Surrogate: d5-NEtFOSAA	38.1		ng/L	40.0		95.2	50-150			
Surrogate: d3-NMeFOSAA	35.8		ng/L	40.0		89.4	50-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-05	Opening calibration verification was within control criteria. Closing calibration verification was outside of criteria and biased on the low side. Re-analysis yielded similar non-conformance.
PF-06	Opening calibration verification was within control criteria. Closing calibration verification was outside of criteria and biased on the high side. Re-analysis yielded similar non-conformance.

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2021
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2021
FL	Florida Department of Health	E871027 NELAP	06/30/2021
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2021
ME	State of Maine	MA00100	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2021
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2021
NC-DW	North Carolina Department of Health	25703	07/31/2021
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2021
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley written

Received By [Signature] Date 4/20/21 Time 1735

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp -2.4
By Blank # _____ Actual Temp _____

Was Custody Seal Intact? n/a Were Samples Tampered with? n/a

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T

pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? n/a MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? _____ Acid n/a Base n/a

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	10	4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

September 22, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21I0272

Enclosed are results of analyses for samples received by the laboratory on September 7, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Matthew J Beaupre
Project Manager

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Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 9/22/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 2110272

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-302	2110272-01	Ground Water		SOP-454 PFAS	
HW-2	2110272-02	Ground Water		SOP-454 PFAS	
HW-3	2110272-03	Ground Water		SOP-454 PFAS	
HW-K	2110272-04	Ground Water		SOP-454 PFAS	
OW-19 (S)	2110272-05	Ground Water		SOP-454 PFAS	
HW-300	2110272-06	Ground Water		SOP-454 PFAS	
OW-19 (M)	2110272-07	Ground Water		SOP-454 PFAS	
HW-S (MW)	2110272-08	Ground Water		SOP-454 PFAS	
HW-S (S)	2110272-09	Ground Water		SOP-454 PFAS	
HW-W (M)	2110272-10	Ground Water		SOP-454 PFAS	
HW-W (D)	2110272-11	Ground Water		SOP-454 PFAS	
HW-W (DD)	2110272-12	Ground Water		SOP-454 PFAS	
RB-1 (S)	2110272-13	Ground Water		SOP-454 PFAS	
RB-1 (M)	2110272-14	Ground Water		SOP-454 PFAS	
HW-U (S)	2110272-15	Ground Water		SOP-454 PFAS	
HW-U (M)	2110272-16	Ground Water		SOP-454 PFAS	
HW-U (D)	2110272-17	Ground Water		SOP-454 PFAS	

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

CASE NARRATIVE SUMMARY

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

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

SOP-454 PFAS**Qualifications:****E**

Reported result is estimated. Value reported over verified calibration range.

Analyte & Samples(s) Qualified:**6:2 Fluorotelomersulfonic acid (6:2**

21I0272-09RE1[HW-S (S)]

L-01

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**Perfluoro(2-ethoxyethane)sulfonic**

B290250-BS1, B290250-BSD1

Perfluoro-5-oxahexanoic acid (PFM

B290250-BS1, B290250-BSD1

PF-17

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:**M2-4:2FTS**

21I0272-13[RB-1 (S)]

M2-6:2FTS

21I0272-13[RB-1 (S)]

M2-8:2FTS

21I0272-07[OW-19 (M)], 21I0272-13[RB-1 (S)]

M2PFTA

21I0272-07RE1[OW-19 (M)]

M3HFPO-DA

21I0272-04RE1[HW-K], 21I0272-10[HW-W (M)], 21I0272-11[HW-W (D)], 21I0272-12[HW-W (DD)], 21I0272-13[RB-1 (S)], 21I0272-14[RB-1 (M)], 21I0272-15[HW-U (S)]

PF-18

Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.

Analyte & Samples(s) Qualified:**M2PFTA**

21I0272-06[HW-300], 21I0272-06RE1[HW-300], 21I0272-07[OW-19 (M)]

M8FOSA

21I0272-04[HW-K], 21I0272-04RE1[HW-K], 21I0272-05[OW-19 (S)], 21I0272-05RE1[OW-19 (S)], 21I0272-06[HW-300], 21I0272-06RE1[HW-300]

MPFDoA

21I0272-06[HW-300], 21I0272-06RE1[HW-300]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

21I0272-07RE1[OW-19 (M)]

d5-NEtFOSAA

21I0272-07RE1[OW-19 (M)]

M2-4:2FTS

21I0272-03RE1[HW-3]

M2PFTA

21I0272-04RE1[HW-K], 21I0272-05RE1[OW-19 (S)]

M3HFPO-DA

B290484-BSD1

M7PFUnA

21I0272-07RE1[OW-19 (M)]

M8FOSA

21I0272-07RE1[OW-19 (M)]

MPFDoA

21I0272-04RE1[HW-K], 21I0272-05RE1[OW-19 (S)], 21I0272-07RE1[OW-19 (M)]

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-302

Sampled: 9/1/2021 12:00

Sample ID: 2110272-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	7.0	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorobutanesulfonic acid (PFBS)	0.63	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoropentanoic acid (PFPeA)	20	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorohexanoic acid (PFHxA)	11	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.6	1.9	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorodecanoic acid (PFDA)	1.0	1.9	0.47	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.90	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
N-EtFOSAA	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
N-MeFOSAA	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorooctanesulfonamide (FOSA)	1.7	1.9	0.40	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	1.2	1.9	0.30	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorohexanesulfonic acid (PFHxS)	4.0	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	6.2	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoroundecanoic acid (PFUnA)	9.9	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluoroheptanoic acid (PFHpA)	6.2	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorooctanoic acid (PFOA)	6.5	1.9	0.65	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorooctanesulfonic acid (PFOS)	15	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC
Perfluorononanoic acid (PFNA)	5.0	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 12:52	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-2

Sampled: 9/1/2021 14:30

Sample ID: 2110272-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	38	10	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorobutanesulfonic acid (PFBS)	ND	10	1.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoropentanoic acid (PFPeA)	140	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorohexanoic acid (PFHxA)	71	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
11Cl-PF3OUdS (F53B Minor)	ND	10	3.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
9Cl-PF3ONS (F53B Major)	ND	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	10	1.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	10	3.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorodecanoic acid (PFDA)	ND	10	2.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorododecanoic acid (PFDoA)	ND	10	2.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	10	1.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	10	4.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
N-EtFOSAA	ND	10	3.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
N-MeFOSAA	ND	10	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorotetradecanoic acid (PFTA)	ND	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorotridecanoic acid (PFTTrDA)	ND	10	1.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	10	1.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	10	1.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorooctanesulfonamide (FOSA)	ND	10	2.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorononanesulfonic acid (PFNS)	ND	10	0.87	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	10	1.6	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoro-1-butanefulfonamide (FBFA)	ND	10	0.99	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorohexanesulfonic acid (PFHxS)	5.6	10	1.8	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	10	2.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	71	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	10	1.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoroundecanoic acid (PFUnA)	ND	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	10	1.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluoroheptanoic acid (PFHpA)	46	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorooctanoic acid (PFOA)	12	10	3.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorooctanesulfonic acid (PFOS)	26	10	3.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH
Perfluorononanoic acid (PFNA)	4.0	10	1.8	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:40	BLH

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-3

Sampled: 9/1/2021 16:00

Sample ID: 2110272-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	58	21	7.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorobutanesulfonic acid (PFBS)	ND	21	3.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoropentanoic acid (PFPeA)	220	21	4.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorohexanoic acid (PFHxA)	81	21	4.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
11Cl-PF3OUdS (F53B Minor)	ND	21	6.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
9Cl-PF3ONS (F53B Major)	ND	21	4.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	21	3.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	21	2.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	13	21	6.5	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorodecanoic acid (PFDA)	ND	21	5.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorododecanoic acid (PFDoA)	ND	21	4.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	21	2.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	21	10	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
N-EtFOSAA	ND	21	6.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
N-MeFOSAA	ND	21	8.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorotetradecanoic acid (PFTA)	ND	21	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorotridecanoic acid (PFTTrDA)	ND	21	2.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	21	3.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	21	3.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorooctanesulfonamide (FOSA)	ND	21	4.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorononanesulfonic acid (PFNS)	ND	21	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	21	3.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoro-1-butanefulfonamide (FBFA)	ND	21	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorohexanesulfonic acid (PFHxS)	5.7	21	3.6	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	21	4.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	21	3.6	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	200	21	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	21	2.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoroundecanoic acid (PFUnA)	ND	21	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	21	2.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluoroheptanoic acid (PFHpA)	35	21	3.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorooctanoic acid (PFOA)	16	21	7.2	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorooctanesulfonic acid (PFOS)	44	21	6.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH
Perfluorononanoic acid (PFNA)	14	21	3.7	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:47	BLH

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-K

Sampled: 9/2/2021 14:30

Sample ID: 2110272-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	14	1.9	0.69	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorobutanoic acid (PFBA)	13	1.9	0.70	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorobutanesulfonic acid (PFBS)	0.36	1.9	0.26	ng/L	1	J	SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorobutanesulfonic acid (PFBS)	0.37	1.9	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoropentanoic acid (PFPeA)	39	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoropentanoic acid (PFPeA)	35	1.9	0.37	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorohexanoic acid (PFHxA)	20	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorohexanoic acid (PFHxA)	19	1.9	0.36	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
9Cl-PF3ONS (F53B Major)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorodecanoic acid (PFDA)	ND	1.9	0.46	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.46	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.87	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-K

Sampled: 9/2/2021 14:30

Sample ID: 2110272-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoro-1-butanedisulfonamide (FBxSA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoro-1-butanedisulfonamide (FBxSA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorohexanesulfonic acid (PFHxS)	1.5	1.9	0.31	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.3	1.9	0.32	ng/L	1	J	SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.24	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.24	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluoroheptanoic acid (PFHpA)	8.6	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluoroheptanoic acid (PFHpA)	8.7	1.9	0.32	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorooctanoic acid (PFOA)	3.8	1.9	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorooctanoic acid (PFOA)	3.8	1.9	0.64	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorooctanesulfonic acid (PFOS)	1.9	1.9	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorooctanesulfonic acid (PFOS)	2.1	1.9	0.56	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH
Perfluorononanoic acid (PFNA)	3.0	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:13	JFC
Perfluorononanoic acid (PFNA)	2.5	1.9	0.32	ng/L	1		SOP-454 PFAS	9/20/21	9/21/21 18:03	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: OW-19 (S)

Sampled: 9/2/2021 18:15

Sample ID: 2110272-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.1	2.0	0.73	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorobutanoic acid (PFBA)	4.3	1.9	0.69	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorobutanesulfonic acid (PFBS)	2.1	2.0	0.28	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorobutanesulfonic acid (PFBS)	2.2	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoropentanoic acid (PFPeA)	9.8	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoropentanoic acid (PFPeA)	10	2.0	0.39	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorohexanoic acid (PFHxA)	7.6	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorohexanoic acid (PFHxA)	7.8	2.0	0.38	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
9Cl-PF3ONS (F53B Major)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.46	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.87	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
N-EtFOSAA	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
N-MeFOSAA	ND	2.0	0.75	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.42	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: OW-19 (S)

Sampled: 9/2/2021 18:15

Sample ID: 2110272-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.17	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.31	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoro-1-butanedisulfonamide (FBBSA)	0.23	2.0	0.19	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-1-butanedisulfonamide (FBBSA)	0.27	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.7	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.8	2.0	0.33	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.50	1.9	0.24	ng/L	1	J	SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.48	2.0	0.25	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluoroheptanoic acid (PFHpA)	5.6	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluoroheptanoic acid (PFHpA)	5.8	2.0	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorooctanoic acid (PFOA)	6.6	1.9	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorooctanoic acid (PFOA)	6.3	2.0	0.67	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorooctanesulfonic acid (PFOS)	31	1.9	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorooctanesulfonic acid (PFOS)	28	2.0	0.59	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH
Perfluorononanoic acid (PFNA)	2.5	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/17/21 13:20	JFC
Perfluorononanoic acid (PFNA)	2.2	2.0	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 15:54	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-300

Sampled: 9/2/2021 16:30

Sample ID: 2110272-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.3	1.9	0.70	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorobutanoic acid (PFBA)	3.1	1.9	0.72	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorobutanesulfonic acid (PFBS)	1.1	1.9	0.26	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorobutanesulfonic acid (PFBS)	0.99	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoropentanoic acid (PFPeA)	3.1	1.9	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoropentanoic acid (PFPeA)	3.6	1.9	0.37	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorohexanoic acid (PFHxA)	2.4	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorohexanoic acid (PFHxA)	2.6	1.9	0.36	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
9Cl-PF3ONS (F53B Major)	ND	1.9	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorodecanoic acid (PFDA)	0.60	1.9	0.46	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorodecanoic acid (PFDA)	0.56	1.9	0.47	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.43	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.91	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
N-EtFOSAA	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
N-MeFOSAA	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-300

Sampled: 9/2/2021 16:30

Sample ID: 2110272-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoro-1-butanedisulfonamide (FBxSA)	0.22	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-1-butanedisulfonamide (FBxSA)	0.21	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.66	1.9	0.33	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.70	1.9	0.32	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.24	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoroheptanoic acid (PFHpA)	2.9	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluoroheptanoic acid (PFHpA)	3.4	1.9	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorooctanoic acid (PFOA)	4.4	1.9	0.66	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorooctanoic acid (PFOA)	5.1	1.9	0.64	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorooctanesulfonic acid (PFOS)	17	1.9	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorooctanesulfonic acid (PFOS)	24	1.9	0.56	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH
Perfluorononanoic acid (PFNA)	2.8	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:26	JFC
Perfluorononanoic acid (PFNA)	4.0	1.9	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:02	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: OW-19 (M)

Sampled: 9/3/2021 16:00

Sample ID: 2110272-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	14	1.8	0.69	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorobutanoic acid (PFBA)	16	1.9	0.70	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorobutanesulfonic acid (PFBS)	0.57	1.8	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorobutanesulfonic acid (PFBS)	0.68	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoropentanoic acid (PFPeA)	49	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoropentanoic acid (PFPeA)	56	1.9	0.37	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorohexanoic acid (PFHxA)	33	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorohexanoic acid (PFHxA)	36	1.9	0.36	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
9Cl-PF3ONS (F53B Major)	ND	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorodecanoic acid (PFDA)	ND	1.8	0.45	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.46	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.21	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.89	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
N-EtFOSAA	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
N-EtFOSAA	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
N-MeFOSAA	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
N-MeFOSAA	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorotridecanoic acid (PFTrDA)	0.43	1.8	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: OW-19 (M)

Sampled: 9/3/2021 16:00

Sample ID: 2110272-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoro-1-butanedisulfonamide (FBSA)	ND	1.8	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoro-1-butanedisulfonamide (FBSA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorohexanesulfonic acid (PFHxS)	15	1.8	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorohexanesulfonic acid (PFHxS)	17	1.9	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoropentanesulfonic acid (PFPeS)	0.53	1.8	0.24	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.64	1.9	0.24	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluoroheptanoic acid (PFHpA)	14	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluoroheptanoic acid (PFHpA)	16	1.9	0.33	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorooctanoic acid (PFOA)	3.7	1.8	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorooctanoic acid (PFOA)	4.4	1.9	0.64	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorooctanesulfonic acid (PFOS)	29	1.8	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorooctanesulfonic acid (PFOS)	36	1.9	0.57	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH
Perfluorononanoic acid (PFNA)	2.1	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:34	JFC
Perfluorononanoic acid (PFNA)	2.3	1.9	0.33	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:09	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-S (MW)

Sampled: 9/3/2021 17:00

Sample ID: 2110272-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.4	1.9	0.71	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorobutanesulfonic acid (PFBS)	0.28	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoropentanoic acid (PFPeA)	3.0	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorohexanoic acid (PFHxA)	2.6	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.47	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.89	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
N-EtFOSAA	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
N-MeFOSAA	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorohexanesulfonic acid (PFHxS)	5.3	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.6	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.24	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluoroheptanoic acid (PFHpA)	1.2	1.9	0.33	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorooctanoic acid (PFOA)	1.4	1.9	0.65	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorooctanesulfonic acid (PFOS)	9.4	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC
Perfluorononanoic acid (PFNA)	0.55	1.9	0.33	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:41	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-S (S)

Sampled: 9/3/2021 17:30

Sample ID: 2110272-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	64	47	18	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorobutanesulfonic acid (PFBS)	ND	47	6.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoropentanoic acid (PFPeA)	260	47	9.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorohexanoic acid (PFHxA)	160	47	9.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
11Cl-PF3OUdS (F53B Minor)	ND	47	15	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
9Cl-PF3ONS (F53B Major)	ND	47	9.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	47	8.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	47	5.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	47	14	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorodecanoic acid (PFDA)	ND	47	12	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorododecanoic acid (PFDoA)	ND	47	10	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	47	5.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	47	22	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
N-EtFOSAA	ND	47	15	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
N-MeFOSAA	ND	47	18	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorotetradecanoic acid (PFTA)	ND	47	8.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorotridecanoic acid (PFTTrDA)	ND	47	6.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	47	6.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	47	7.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorooctanesulfonamide (FOSA)	ND	47	9.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorononanesulfonic acid (PFNS)	ND	47	4.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	47	7.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoro-1-butanefulfonamide (FBFA)	5.8	47	4.5	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorohexanesulfonic acid (PFHxS)	64	47	8.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	47	9.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	47	8.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	5200	47	8.6	ng/L	1	E	SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	47	6.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoroundecanoic acid (PFUnA)	ND	47	8.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	47	6.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluoroheptanoic acid (PFHpA)	110	47	8.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorooctanoic acid (PFOA)	130	47	16	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorooctanesulfonic acid (PFOS)	48	47	14	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH
Perfluorononanoic acid (PFNA)	100	47	8.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:16	BLH

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-W (M)

Sampled: 9/5/2021 17:30

Sample ID: 2110272-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.1	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoropentanoic acid (PFPeA)	13	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorohexanoic acid (PFHxA)	6.8	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.83	1.9	0.58	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.47	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.89	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
N-EtFOSAA	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
N-MeFOSAA	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorooctanesulfonamide (FOSA)	76	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	4.9	1.9	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.36	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorohexanesulfonic acid (PFHxS)	15	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.9	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.29	1.9	0.25	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoroundecanoic acid (PFUnA)	0.66	1.9	0.35	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluoroheptanoic acid (PFHpA)	3.4	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorooctanoic acid (PFOA)	2.4	1.9	0.65	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorooctanesulfonic acid (PFOS)	42	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC
Perfluorononanoic acid (PFNA)	1.0	1.9	0.33	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 20:55	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-W (D)

Sampled: 9/5/2021 17:00

Sample ID: 2110272-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	7.4	1.9	0.70	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorobutanesulfonic acid (PFBS)	0.27	1.9	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoropentanoic acid (PFPeA)	20	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorohexanoic acid (PFHxA)	13	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.46	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorohexanesulfonic acid (PFHxS)	6.4	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.42	1.9	0.34	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.27	1.9	0.24	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluoroheptanoic acid (PFHpA)	10	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorooctanoic acid (PFOA)	9.4	1.9	0.64	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorooctanesulfonic acid (PFOS)	17	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC
Perfluorononanoic acid (PFNA)	2.5	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:02	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-W (DD)

Sampled: 9/5/2021 16:30

Sample ID: 2110272-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	5.4	2.0	0.74	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoropentanoic acid (PFPeA)	13	2.0	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorohexanoic acid (PFHxA)	8.8	2.0	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
N-EtFOSAA	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
N-MeFOSAA	ND	2.0	0.75	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.42	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.17	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.19	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorohexanesulfonic acid (PFHxS)	4.8	2.0	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluoroheptanoic acid (PFHpA)	7.3	2.0	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorooctanoic acid (PFOA)	6.9	2.0	0.67	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorooctanesulfonic acid (PFOS)	8.1	2.0	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC
Perfluorononanoic acid (PFNA)	2.0	2.0	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:10	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: RB-1 (S)

Sampled: 9/5/2021 18:00

Sample ID: 2110272-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.4	1.8	0.69	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorobutanesulfonic acid (PFBS)	0.65	1.8	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoropentanoic acid (PFPeA)	16	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorohexanoic acid (PFHxA)	9.8	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
9Cl-PF3ONS (F53B Major)	ND	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorodecanoic acid (PFDA)	ND	1.8	0.45	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.21	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
N-EtFOSAA	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
N-MeFOSAA	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.30	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.15	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	0.18	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorohexanesulfonic acid (PFHxS)	5.1	1.8	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.24	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluoroheptanoic acid (PFHpA)	7.7	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorooctanoic acid (PFOA)	9.3	1.8	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorooctanesulfonic acid (PFOS)	10	1.8	0.55	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC
Perfluorononanoic acid (PFNA)	2.6	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:17	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: RB-1 (M)

Sampled: 9/5/2021 17:30

Sample ID: 2110272-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.5	1.8	0.68	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorobutanesulfonic acid (PFBS)	1.7	1.8	0.26	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoropentanoic acid (PFPeA)	22	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorohexanoic acid (PFHxA)	15	1.8	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
9Cl-PF3ONS (F53B Major)	ND	1.8	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.56	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorodecanoic acid (PFDA)	3.3	1.8	0.45	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	0.21	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoroheptanesulfonic acid (PFHpS)	0.91	1.8	0.86	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
N-EtFOSAA	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
N-MeFOSAA	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorodecanesulfonic acid (PFDS)	0.63	1.8	0.30	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.15	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	0.62	1.8	0.29	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.93	1.8	0.18	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorohexanesulfonic acid (PFHxS)	9.9	1.8	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.38	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.31	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	13	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.92	1.8	0.24	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluoroheptanoic acid (PFHpA)	7.3	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorooctanoic acid (PFOA)	12	1.8	0.63	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorooctanesulfonic acid (PFOS)	55	1.8	0.55	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC
Perfluorononanoic acid (PFNA)	4.4	1.8	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:24	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-U (S)

Sampled: 9/5/2021 19:30

Sample ID: 2110272-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.9	1.9	0.70	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorobutanesulfonic acid (PFBS)	2.7	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoropentanoic acid (PFPeA)	7.5	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorohexanoic acid (PFHxA)	7.2	1.9	0.36	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorodecanoic acid (PFDA)	1.1	1.9	0.46	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
N-EtFOSAA	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
N-MeFOSAA	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorodecanesulfonic acid (PFDS)	0.32	1.9	0.31	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.29	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.44	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorohexanesulfonic acid (PFHxS)	3.4	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.39	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.24	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluoroheptanoic acid (PFHpA)	4.0	1.9	0.32	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorooctanoic acid (PFOA)	4.7	1.9	0.64	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorooctanesulfonic acid (PFOS)	29	1.9	0.57	ng/L	1		SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC
Perfluorononanoic acid (PFNA)	1.7	1.9	0.32	ng/L	1	J	SOP-454 PFAS	9/10/21	9/15/21 21:31	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-U (M)

Sampled: 9/5/2021 19:00

Sample ID: 2110272-16

Sample Matrix: Ground Water

Sample Flags: D

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.6	4.1	1.5	ng/L	1	J	SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorobutanesulfonic acid (PFBS)	8.6	4.1	0.58	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoropentanoic acid (PFPeA)	8.3	4.1	0.81	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorohexanoic acid (PFHxA)	7.1	4.1	0.79	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
11Cl-PF3OUdS (F53B Minor)	ND	4.1	1.3	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
9Cl-PF3ONS (F53B Major)	ND	4.1	0.80	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	0.72	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	0.49	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	1.3	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorodecanoic acid (PFDA)	ND	4.1	1.0	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorododecanoic acid (PFDoA)	ND	4.1	0.91	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	4.1	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	1.9	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
N-EtFOSAA	ND	4.1	1.3	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
N-MeFOSAA	ND	4.1	1.6	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorotetradecanoic acid (PFTA)	ND	4.1	0.75	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	0.57	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	0.58	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	0.67	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorooctanesulfonamide (FOSA)	ND	4.1	0.87	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorononanesulfonic acid (PFNS)	ND	4.1	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	0.64	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoro-1-butanefulfonamide (FBFA)	1.8	4.1	0.39	ng/L	1	J	SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorohexanesulfonic acid (PFHxS)	11	4.1	0.70	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	0.86	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	0.70	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	0.75	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.1	4.1	0.53	ng/L	1	J	SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoroundecanoic acid (PFUnA)	ND	4.1	0.76	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	0.57	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluoroheptanoic acid (PFHpA)	4.9	4.1	0.71	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorooctanoic acid (PFOA)	9.4	4.1	1.4	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorooctanesulfonic acid (PFOS)	27	4.1	1.2	ng/L	1		SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC
Perfluorononanoic acid (PFNA)	1.1	4.1	0.71	ng/L	1	J	SOP-454 PFAS	9/16/21	9/17/21 20:38	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110272

Date Received: 9/7/2021

Field Sample #: HW-U (D)

Sampled: 9/5/2021 18:30

Sample ID: 2110272-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.8	10	3.9	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorobutanesulfonic acid (PFBS)	7.8	10	1.5	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoropentanoic acid (PFPeA)	13	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorohexanoic acid (PFHxA)	10	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
11Cl-PF3OUdS (F53B Minor)	ND	10	3.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
9Cl-PF3ONS (F53B Major)	ND	10	2.0	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	10	1.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	10	3.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorodecanoic acid (PFDA)	ND	10	2.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorododecanoic acid (PFDoA)	ND	10	2.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	10	1.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	10	4.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
N-EtFOSAA	ND	10	3.3	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
N-MeFOSAA	ND	10	3.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorotetradecanoic acid (PFTA)	ND	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorotridecanoic acid (PFTTrDA)	ND	10	1.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	10	1.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	10	1.7	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorooctanesulfonamide (FOSA)	ND	10	2.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorononanesulfonic acid (PFNS)	ND	10	0.87	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	10	1.6	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoro-1-butanefulfonamide (FBFA)	1.8	10	0.99	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorohexanesulfonic acid (PFHxS)	22	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	10	2.2	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	10	1.8	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	40	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoropentanesulfonic acid (PFPeS)	1.4	10	1.3	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoroundecanoic acid (PFUnA)	ND	10	1.9	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	10	1.4	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluoroheptanoic acid (PFHpA)	7.7	10	1.8	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorooctanoic acid (PFOA)	13	10	3.5	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorooctanesulfonic acid (PFOS)	51	10	3.1	ng/L	1		SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH
Perfluorononanoic acid (PFNA)	5.0	10	1.8	ng/L	1	J	SOP-454 PFAS	9/15/21	9/20/21 16:23	BLH

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

Sample Extraction Data

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0272-01 [HW-302]	B289938	262	1.00	09/10/21
21I0272-04 [HW-K]	B289938	270	1.00	09/10/21
21I0272-05 [OW-19 (S)]	B289938	269	1.00	09/10/21
21I0272-06 [HW-300]	B289938	259	1.00	09/10/21
21I0272-07 [OW-19 (M)]	B289938	271	1.00	09/10/21
21I0272-08 [HW-S (MW)]	B289938	264	1.00	09/10/21
21I0272-10 [HW-W (M)]	B289938	263	1.00	09/10/21
21I0272-11 [HW-W (D)]	B289938	266	1.00	09/10/21
21I0272-12 [HW-W (DD)]	B289938	253	1.00	09/10/21
21I0272-13 [RB-1 (S)]	B289938	272	1.00	09/10/21
21I0272-14 [RB-1 (M)]	B289938	272	1.00	09/10/21
21I0272-15 [HW-U (S)]	B289938	266	1.00	09/10/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0272-16RE1 [HW-U (M)]	B290193	122	1.00	09/16/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0272-02RE1 [HW-2]	B290250	48.3	1.00	09/15/21
21I0272-03RE1 [HW-3]	B290250	23.6	1.00	09/15/21
21I0272-05RE1 [OW-19 (S)]	B290250	254	1.00	09/15/21
21I0272-06RE1 [HW-300]	B290250	267	1.00	09/15/21
21I0272-07RE1 [OW-19 (M)]	B290250	265	1.00	09/15/21
21I0272-09RE1 [HW-S (S)]	B290250	10.6	1.00	09/15/21
21I0272-17RE1 [HW-U (D)]	B290250	48.2	1.00	09/15/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0272-04RE1 [HW-K]	B290484	268	1.00	09/20/21

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B289938 - SOP 454-PFAAS
Blank (B289938-BLK1)

Prepared: 09/10/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L
11Cl-PF3OUdS (F53B Minor)	ND	1.9	ng/L
9Cl-PF3ONS (F53B Major)	ND	1.9	ng/L
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L
N-EtFOSAA	ND	1.9	ng/L
N-MeFOSAA	ND	1.9	ng/L
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L

LCS (B289938-BS1)

Prepared: 09/10/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	8.65	2.0	ng/L	9.93	87.1	73-129
Perfluorobutanesulfonic acid (PFBS)	7.82	2.0	ng/L	8.79	89.0	72-130
Perfluoropentanoic acid (PFPeA)	8.45	2.0	ng/L	9.93	85.0	72-129
Perfluorohexanoic acid (PFHxA)	8.56	2.0	ng/L	9.93	86.2	72-129
11Cl-PF3OUdS (F53B Minor)	9.58	2.0	ng/L	9.36	102	50-150
9Cl-PF3ONS (F53B Major)	8.50	2.0	ng/L	9.26	91.9	50-150
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.36	2.0	ng/L	9.36	89.4	50-150
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.3	2.0	ng/L	9.93	104	50-150
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.23	2.0	ng/L	9.53	86.3	67-138
Perfluorodecanoic acid (PFDA)	8.34	2.0	ng/L	9.93	84.0	71-129
Perfluorododecanoic acid (PFDoA)	9.07	2.0	ng/L	9.93	91.3	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.91	2.0	ng/L	8.84	101	50-150

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B289938 - SOP 454-PFAAS
LCS (B289938-BS1)

Prepared: 09/10/21 Analyzed: 09/17/21

Perfluoroheptanesulfonic acid (PFHpS)	9.03	2.0	ng/L	9.48		95.2	69-134			
N-EtFOSAA	8.17	2.0	ng/L	9.93		82.2	61-135			
N-MeFOSAA	8.02	2.0	ng/L	9.93		80.7	65-136			
Perfluorotetradecanoic acid (PFTA)	8.82	2.0	ng/L	9.93		88.8	71-132			
Perfluorotridecanoic acid (PFTDA)	8.76	2.0	ng/L	9.93		88.2	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.51	2.0	ng/L	9.29		91.7	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.14	2.0	ng/L	9.58		84.9	53-142			
Perfluorooctanesulfonamide (FOSA)	8.84	2.0	ng/L	9.93		89.0	67-137			
Perfluorononanesulfonic acid (PFNS)	9.29	2.0	ng/L	9.53		97.5	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.53	2.0	ng/L	9.93		85.9	50-150			
Perfluoro-1-butanedisulfonamide (FBSA)	8.97	2.0	ng/L	9.93		90.4	50-150			
Perfluorohexanesulfonic acid (PFHxS)	8.50	2.0	ng/L	9.04		94.0	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.95	2.0	ng/L	9.93		100	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.2	2.0	ng/L	9.93		102	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.80	2.0	ng/L	9.44		93.3	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.31	2.0	ng/L	9.34		89.0	71-127			
Perfluoroundecanoic acid (PFUnA)	7.64	2.0	ng/L	9.93		76.9	69-133			
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	8.69	2.0	ng/L	9.93		87.5	50-150			
Perfluoroheptanoic acid (PFHpA)	9.50	2.0	ng/L	9.93		95.6	72-130			
Perfluorooctanoic acid (PFOA)	8.03	2.0	ng/L	9.93		80.9	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.17	2.0	ng/L	9.19		88.9	65-140			
Perfluorononanoic acid (PFNA)	9.54	2.0	ng/L	9.93		96.0	69-130			

LCS Dup (B289938-BS1)

Prepared: 09/10/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	8.67	2.0	ng/L	9.87		87.8	73-129	0.147	30	
Perfluorobutanesulfonic acid (PFBS)	7.59	2.0	ng/L	8.74		86.9	72-130	2.96	30	
Perfluoropentanoic acid (PFPeA)	8.64	2.0	ng/L	9.87		87.5	72-129	2.29	30	
Perfluorohexanoic acid (PFHxA)	8.43	2.0	ng/L	9.87		85.4	72-129	1.57	30	
11Cl-PF3OUdS (F53B Minor)	9.34	2.0	ng/L	9.30		100	50-150	2.56	30	
9Cl-PF3ONS (F53B Major)	10.0	2.0	ng/L	9.20		109	50-150	16.6	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.99	2.0	ng/L	9.30		85.9	50-150	4.56	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.81	2.0	ng/L	9.87		99.4	50-150	4.96	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.59	2.0	ng/L	9.48		101	67-138	15.3	30	
Perfluorodecanoic acid (PFDA)	8.97	2.0	ng/L	9.87		90.8	71-129	7.28	30	
Perfluorododecanoic acid (PFDoA)	7.55	2.0	ng/L	9.87		76.5	72-134	18.2	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.82	2.0	ng/L	8.79		100	50-150	0.981	30	
Perfluoroheptanesulfonic acid (PFHpS)	9.12	2.0	ng/L	9.43		96.7	69-134	0.983	30	
N-EtFOSAA	7.33	2.0	ng/L	9.87		74.2	61-135	10.9	30	
N-MeFOSAA	8.96	2.0	ng/L	9.87		90.8	65-136	11.1	30	
Perfluorotetradecanoic acid (PFTA)	8.80	2.0	ng/L	9.87		89.1	71-132	0.247	30	
Perfluorotridecanoic acid (PFTDA)	8.59	2.0	ng/L	9.87		87.0	65-144	1.98	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.65	2.0	ng/L	9.23		93.7	63-143	1.64	30	
Perfluorodecanesulfonic acid (PFDS)	8.40	2.0	ng/L	9.53		88.1	53-142	3.15	30	
Perfluorooctanesulfonamide (FOSA)	8.78	2.0	ng/L	9.87		88.9	67-137	0.679	30	
Perfluorononanesulfonic acid (PFNS)	9.53	2.0	ng/L	9.48		101	69-127	2.57	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.95	2.0	ng/L	9.87		90.7	50-150	4.83	30	
Perfluoro-1-butanedisulfonamide (FBSA)	8.70	2.0	ng/L	9.87		88.1	50-150	3.07	30	
Perfluorohexanesulfonic acid (PFHxS)	7.92	2.0	ng/L	8.99		88.1	68-131	7.06	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.88	2.0	ng/L	9.87		100	50-150	0.762	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.2	2.0	ng/L	9.87		103	50-150	0.0908	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B289938 - SOP 454-PFAAS
LCS Dup (B289938-BS1)

Prepared: 09/10/21 Analyzed: 09/17/21

6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.07	2.0	ng/L	9.38		86.0	64-140	8.69	30	
Perfluoropetanesulfonic acid (PFPeS)	7.57	2.0	ng/L	9.28		81.5	71-127	9.32	30	
Perfluoroundecanoic acid (PFUnA)	9.08	2.0	ng/L	9.87		91.9	69-133	17.2	30	
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	8.51	2.0	ng/L	9.87		86.2	50-150	2.04	30	
Perfluoroheptanoic acid (PFHpA)	8.84	2.0	ng/L	9.87		89.5	72-130	7.24	30	
Perfluorooctanoic acid (PFOA)	9.07	2.0	ng/L	9.87		91.8	71-133	12.1	30	
Perfluorooctanesulfonic acid (PFOS)	8.49	2.0	ng/L	9.13		93.0	65-140	3.90	30	
Perfluorononanoic acid (PFNA)	9.04	2.0	ng/L	9.87		91.5	69-130	5.38	30	

Batch B290193 - SOP 454-PFAAS
Blank (B290193-BLK1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	ND	2.1	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.1	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.1	ng/L							
11Cl-PF3OUdS (F53B Minor)	ND	2.1	ng/L							
9Cl-PF3ONS (F53B Major)	ND	2.1	ng/L							
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.1	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.1	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.1	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.1	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	ng/L							
N-EtFOSAA	ND	2.1	ng/L							
N-MeFOSAA	ND	2.1	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.1	ng/L							
Perfluorotridecanoic acid (PFTTrDA)	ND	2.1	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.1	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.1	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.1	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	ng/L							
Perfluoropetanesulfonic acid (PFPeS)	ND	2.1	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.1	ng/L							
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND	2.1	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.1	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.1	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.1	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290193 - SOP 454-PFAAS
LCS (B290193-BS1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	9.12	2.0	ng/L	9.88		92.3	73-129			
Perfluorobutanesulfonic acid (PFBS)	8.08	2.0	ng/L	8.74		92.4	72-130			
Perfluoropentanoic acid (PFPeA)	8.84	2.0	ng/L	9.88		89.5	72-129			
Perfluorohexanoic acid (PFHxA)	8.73	2.0	ng/L	9.88		88.4	72-129			
11Cl-PF3OUdS (F53B Minor)	8.28	2.0	ng/L	9.31		88.9	50-150			
9Cl-PF3ONS (F53B Major)	8.28	2.0	ng/L	9.21		89.9	50-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.15	2.0	ng/L	9.31		87.5	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.44	2.0	ng/L	9.88		75.3	50-150			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.3	2.0	ng/L	9.49		109	67-138			
Perfluorodecanoic acid (PFDA)	8.05	2.0	ng/L	9.88		81.5	71-129			
Perfluorododecanoic acid (PFDoA)	9.34	2.0	ng/L	9.88		94.5	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	10.1	2.0	ng/L	8.79		115	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	8.62	2.0	ng/L	9.44		91.4	69-134			
N-EtFOSAA	11.2	2.0	ng/L	9.88		113	61-135			
N-MeFOSAA	10.4	2.0	ng/L	9.88		105	65-136			
Perfluorotetradecanoic acid (PFTA)	8.09	2.0	ng/L	9.88		81.9	71-132			
Perfluorotridecanoic acid (PFTrDA)	9.73	2.0	ng/L	9.88		98.4	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.76	2.0	ng/L	9.24		94.8	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.71	2.0	ng/L	9.53		91.4	53-142			
Perfluorooctanesulfonamide (FOSA)	9.40	2.0	ng/L	9.88		95.1	67-137			
Perfluorononanesulfonic acid (PFNS)	9.74	2.0	ng/L	9.49		103	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.23	2.0	ng/L	9.88		83.3	50-150			
Perfluoro-1-butanessulfonamide (FBSA)	9.48	2.0	ng/L	9.88		95.9	50-150			
Perfluorohexanesulfonic acid (PFHxS)	8.34	2.0	ng/L	8.99		92.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	2.0	ng/L	9.88		106	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	11.1	2.0	ng/L	9.88		112	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.69	2.0	ng/L	9.39		92.6	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.18	2.0	ng/L	9.29		88.1	71-127			
Perfluoroundecanoic acid (PFUnA)	7.60	2.0	ng/L	9.88		76.9	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.32	2.0	ng/L	9.88		94.4	50-150			
Perfluoroheptanoic acid (PFHpA)	9.23	2.0	ng/L	9.88		93.4	72-130			
Perfluorooctanoic acid (PFOA)	8.53	2.0	ng/L	9.88		86.3	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.35	2.0	ng/L	9.14		91.4	65-140			
Perfluorononanoic acid (PFNA)	9.09	2.0	ng/L	9.88		92.0	69-130			

LCS Dup (B290193-BS1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	8.44	2.0	ng/L	9.87		85.5	73-129	7.72	30	
Perfluorobutanesulfonic acid (PFBS)	7.38	2.0	ng/L	8.73		84.5	72-130	9.10	30	
Perfluoropentanoic acid (PFPeA)	8.18	2.0	ng/L	9.87		82.9	72-129	7.71	30	
Perfluorohexanoic acid (PFHxA)	8.11	2.0	ng/L	9.87		82.2	72-129	7.40	30	
11Cl-PF3OUdS (F53B Minor)	7.84	2.0	ng/L	9.30		84.4	50-150	5.39	30	
9Cl-PF3ONS (F53B Major)	7.37	2.0	ng/L	9.20		80.2	50-150	11.6	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.75	2.0	ng/L	9.30		83.4	50-150	4.95	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.40	2.0	ng/L	9.87		85.2	50-150	12.1	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.27	2.0	ng/L	9.47		97.9	67-138	10.5	30	
Perfluorodecanoic acid (PFDA)	8.71	2.0	ng/L	9.87		88.2	71-129	7.84	30	
Perfluorododecanoic acid (PFDoA)	7.65	2.0	ng/L	9.87		77.6	72-134	19.8	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.53	2.0	ng/L	8.78		108	50-150	5.66	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290193 - SOP 454-PFAAS
LCS Dup (B290193-BSD1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluoroheptanesulfonic acid (PFHpS)	7.86	2.0	ng/L	9.42		83.4	69-134	9.26	30	
N-EtFOSAA	9.11	2.0	ng/L	9.87		92.3	61-135	20.5	30	
N-MeFOSAA	10.8	2.0	ng/L	9.87		109	65-136	3.33	30	
Perfluorotetradecanoic acid (PFTA)	7.80	2.0	ng/L	9.87		79.0	71-132	3.64	30	
Perfluorotridecanoic acid (PFTTrDA)	8.28	2.0	ng/L	9.87		83.9	65-144	16.1	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.98	2.0	ng/L	9.23		86.5	63-143	9.32	30	
Perfluorodecanesulfonic acid (PFDS)	8.60	2.0	ng/L	9.52		90.3	53-142	1.29	30	
Perfluorooctanesulfonamide (FOSA)	8.10	2.0	ng/L	9.87		82.0	67-137	14.9	30	
Perfluorononanesulfonic acid (PFNS)	8.32	2.0	ng/L	9.47		87.9	69-127	15.7	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	7.13	2.0	ng/L	9.87		72.2	50-150	14.4	30	
Perfluoro-1-butanefulfonamide (FBSA)	8.85	2.0	ng/L	9.87		89.7	50-150	6.87	30	
Perfluorohexanesulfonic acid (PFHxS)	7.40	2.0	ng/L	8.98		82.4	68-131	12.0	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.75	2.0	ng/L	9.87		98.8	50-150	6.83	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.2	2.0	ng/L	9.87		103	50-150	8.13	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.87	2.0	ng/L	9.37		94.6	64-140	2.05	30	
Perfluoropentanesulfonic acid (PFPeS)	7.62	2.0	ng/L	9.28		82.2	71-127	7.07	30	
Perfluoroundecanoic acid (PFUnA)	8.49	2.0	ng/L	9.87		86.0	69-133	11.0	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.75	2.0	ng/L	9.87		88.7	50-150	6.35	30	
Perfluoroheptanoic acid (PFHpA)	8.69	2.0	ng/L	9.87		88.0	72-130	6.09	30	
Perfluorooctanoic acid (PFOA)	7.14	2.0	ng/L	9.87		72.4	71-133	17.7	30	
Perfluorooctanesulfonic acid (PFOS)	7.89	2.0	ng/L	9.13		86.5	65-140	5.66	30	
Perfluorononanoic acid (PFNA)	9.27	2.0	ng/L	9.87		93.9	69-130	1.98	30	

Batch B290250 - SOP 454-PFAAS
Blank (B290250-BLK1)

Prepared: 09/15/21 Analyzed: 09/20/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Minor)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Major)	ND	2.0	ng/L							
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290250 - SOP 454-PFAAS
Blank (B290250-BLK1)

Prepared: 09/15/21 Analyzed: 09/20/21

Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L

LCS (B290250-BS1)

Prepared: 09/15/21 Analyzed: 09/20/21

Perfluorobutanoic acid (PFBA)	9.88	2.0	ng/L	9.91	99.6	73-129	
Perfluorobutanesulfonic acid (PFBS)	8.59	2.0	ng/L	8.77	97.9	72-130	
Perfluoropentanoic acid (PFPeA)	9.57	2.0	ng/L	9.91	96.5	72-129	
Perfluorohexanoic acid (PFHxA)	9.46	2.0	ng/L	9.91	95.4	72-129	
11Cl-PF3OUdS (F53B Minor)	9.07	2.0	ng/L	9.34	97.1	50-150	
9Cl-PF3ONS (F53B Major)	9.76	2.0	ng/L	9.24	106	50-150	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.30	2.0	ng/L	9.34	88.9	50-150	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.7	2.0	ng/L	9.91	108	50-150	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.0	2.0	ng/L	9.52	105	67-138	
Perfluorodecanoic acid (PFDA)	9.66	2.0	ng/L	9.91	97.4	71-129	
Perfluorododecanoic acid (PFDoA)	9.61	2.0	ng/L	9.91	96.9	72-134	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	15.1	2.0	ng/L	8.82	171	* 50-150	L-01
Perfluoroheptanesulfonic acid (PFHpS)	9.12	2.0	ng/L	9.47	96.3	69-134	
N-EtFOSAA	11.5	2.0	ng/L	9.91	116	61-135	
N-MeFOSAA	11.4	2.0	ng/L	9.91	115	65-136	
Perfluorotetradecanoic acid (PFTA)	9.86	2.0	ng/L	9.91	99.5	71-132	
Perfluorotridecanoic acid (PFTrDA)	9.23	2.0	ng/L	9.91	93.1	65-144	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.57	2.0	ng/L	9.27	103	63-143	
Perfluorodecanesulfonic acid (PFDS)	8.62	2.0	ng/L	9.57	90.1	53-142	
Perfluorooctanesulfonamide (FOSA)	9.94	2.0	ng/L	9.91	100	67-137	
Perfluorononanesulfonic acid (PFNS)	9.83	2.0	ng/L	9.52	103	69-127	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.45	2.0	ng/L	9.91	85.3	50-150	
Perfluoro-1-butanedisulfonamide (FBSA)	9.38	2.0	ng/L	9.91	94.6	50-150	
Perfluorohexanesulfonic acid (PFHxS)	9.17	2.0	ng/L	9.02	102	68-131	
Perfluoro-4-oxapentanoic acid (PFMPA)	13.0	2.0	ng/L	9.91	131	50-150	
Perfluoro-5-oxahexanoic acid (PFMBA)	17.0	2.0	ng/L	9.91	171	* 50-150	L-01
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.59	2.0	ng/L	9.42	102	64-140	
Perfluoropentanesulfonic acid (PFPeS)	8.91	2.0	ng/L	9.32	95.6	71-127	
Perfluoroundecanoic acid (PFUnA)	9.10	2.0	ng/L	9.91	91.8	69-133	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	13.4	2.0	ng/L	9.91	135	50-150	
Perfluoroheptanoic acid (PFHpA)	10.1	2.0	ng/L	9.91	102	72-130	
Perfluorooctanoic acid (PFOA)	9.31	2.0	ng/L	9.91	93.9	71-133	
Perfluorooctanesulfonic acid (PFOS)	9.03	2.0	ng/L	9.17	98.4	65-140	
Perfluorononanoic acid (PFNA)	10.2	2.0	ng/L	9.91	103	69-130	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290250 - SOP 454-PFAAS
LCS Dup (B290250-BSD1)

Prepared: 09/15/21 Analyzed: 09/20/21

Perfluorobutanoic acid (PFBA)	10.5	2.0	ng/L	9.84		107	73-129	6.58	30	
Perfluorobutanesulfonic acid (PFBS)	9.30	2.0	ng/L	8.71		107	72-130	7.97	30	
Perfluoropentanoic acid (PFPeA)	10.2	2.0	ng/L	9.84		104	72-129	6.72	30	
Perfluorohexanoic acid (PFHxA)	10.1	2.0	ng/L	9.84		102	72-129	6.32	30	
11Cl-PF3OUdS (F53B Minor)	9.54	2.0	ng/L	9.27		103	50-150	5.06	30	
9Cl-PF3ONS (F53B Major)	9.85	2.0	ng/L	9.17		107	50-150	0.914	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	9.12	2.0	ng/L	9.27		98.3	50-150	9.39	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.43	2.0	ng/L	9.84		95.8	50-150	12.9	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.4	2.0	ng/L	9.45		120	67-138	12.5	30	
Perfluorodecanoic acid (PFDA)	10.0	2.0	ng/L	9.84		102	71-129	3.62	30	
Perfluorododecanoic acid (PFDoA)	11.1	2.0	ng/L	9.84		113	72-134	14.5	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	16.4	2.0	ng/L	8.76		187	* 50-150	8.25	30	L-01
Perfluoroheptanesulfonic acid (PFHpS)	9.78	2.0	ng/L	9.40		104	69-134	7.01	30	
N-EtFOSAA	11.9	2.0	ng/L	9.84		121	61-135	3.70	30	
N-MeFOSAA	13.4	2.0	ng/L	9.84		136	65-136	16.5	30	
Perfluorotetradecanoic acid (PFTA)	10.4	2.0	ng/L	9.84		106	71-132	5.45	30	
Perfluorotridecanoic acid (PFTrDA)	10.0	2.0	ng/L	9.84		102	65-144	8.01	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.5	2.0	ng/L	9.20		114	63-143	9.56	30	
Perfluorodecanesulfonic acid (PFDS)	9.88	2.0	ng/L	9.50		104	53-142	13.6	30	
Perfluorooctanesulfonamide (FOSA)	10.2	2.0	ng/L	9.84		104	67-137	2.86	30	
Perfluorononanesulfonic acid (PFNS)	10.1	2.0	ng/L	9.45		107	69-127	2.65	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	9.44	2.0	ng/L	9.84		95.9	50-150	11.0	30	
Perfluoro-1-butanedisulfonamide (FBSA)	10.2	2.0	ng/L	9.84		104	50-150	8.55	30	
Perfluorohexanesulfonic acid (PFHxS)	9.75	2.0	ng/L	8.96		109	68-131	6.13	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	13.8	2.0	ng/L	9.84		140	50-150	5.88	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	17.9	2.0	ng/L	9.84		182	* 50-150	5.61	30	L-01
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11.9	2.0	ng/L	9.35		127	64-140	21.3	30	
Perfluoropentanesulfonic acid (PFPeS)	9.99	2.0	ng/L	9.25		108	71-127	11.5	30	
Perfluoroundecanoic acid (PFUnA)	9.89	2.0	ng/L	9.84		100	69-133	8.32	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	14.2	2.0	ng/L	9.84		144	50-150	5.64	30	
Perfluoroheptanoic acid (PFHpA)	10.8	2.0	ng/L	9.84		110	72-130	6.41	30	
Perfluorooctanoic acid (PFOA)	9.74	2.0	ng/L	9.84		98.9	71-133	4.47	30	
Perfluorooctanesulfonic acid (PFOS)	9.59	2.0	ng/L	9.11		105	65-140	6.07	30	
Perfluorononanoic acid (PFNA)	10.8	2.0	ng/L	9.84		109	69-130	5.44	30	

Batch B290484 - SOP 454-PFAAS
Blank (B290484-BLK1)

Prepared: 09/20/21 Analyzed: 09/21/21

Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L
11Cl-PF3OUdS (F53B Minor)	ND	1.9	ng/L
9Cl-PF3ONS (F53B Major)	ND	1.9	ng/L
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290484 - SOP 454-PFAAS
Blank (B290484-BLK1)

Prepared: 09/20/21 Analyzed: 09/21/21

Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L
N-EtFOSAA	ND	1.9	ng/L
N-MeFOSAA	ND	1.9	ng/L
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L
Perfluoro-1-butanedisulfonamide (FBSA)	ND	1.9	ng/L
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L

LCS (B290484-BS1)

Prepared: 09/20/21 Analyzed: 09/21/21

Perfluorobutanoic acid (PFBA)	8.78	1.9	ng/L	9.64	91.1	73-129
Perfluorobutanesulfonic acid (PFBS)	7.75	1.9	ng/L	8.53	90.9	72-130
Perfluoropentanoic acid (PFPeA)	8.41	1.9	ng/L	9.64	87.3	72-129
Perfluorohexanoic acid (PFHxA)	8.45	1.9	ng/L	9.64	87.7	72-129
11Cl-PF3OUdS (F53B Minor)	7.29	1.9	ng/L	9.08	80.3	50-150
9Cl-PF3ONS (F53B Major)	7.65	1.9	ng/L	8.98	85.1	50-150
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.92	1.9	ng/L	9.08	87.2	50-150
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.78	1.9	ng/L	9.64	80.7	50-150
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.12	1.9	ng/L	9.25	98.5	67-138
Perfluorodecanoic acid (PFDA)	7.85	1.9	ng/L	9.64	81.5	71-129
Perfluorododecanoic acid (PFDoA)	9.02	1.9	ng/L	9.64	93.6	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	9.86	1.9	ng/L	8.58	115	50-150
Perfluoroheptanesulfonic acid (PFHpS)	8.53	1.9	ng/L	9.20	92.7	69-134
N-EtFOSAA	9.85	1.9	ng/L	9.64	102	61-135
N-MeFOSAA	10.1	1.9	ng/L	9.64	105	65-136
Perfluorotetradecanoic acid (PFTA)	8.22	1.9	ng/L	9.64	85.3	71-132
Perfluorotridecanoic acid (PFTrDA)	8.31	1.9	ng/L	9.64	86.2	65-144
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.61	1.9	ng/L	9.01	95.5	63-143
Perfluorodecanesulfonic acid (PFDS)	7.41	1.9	ng/L	9.30	79.7	53-142
Perfluorooctanesulfonamide (FOSA)	8.53	1.9	ng/L	9.64	88.5	67-137
Perfluorononanesulfonic acid (PFNS)	8.63	1.9	ng/L	9.25	93.3	69-127
Perfluoro-1-hexanesulfonamide (FHxSA)	8.64	1.9	ng/L	9.64	89.7	50-150
Perfluoro-1-butanedisulfonamide (FBSA)	9.70	1.9	ng/L	9.64	101	50-150
Perfluorohexanesulfonic acid (PFHxS)	7.70	1.9	ng/L	8.77	87.8	68-131

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290484 - SOP 454-PFAAS
LCS (B290484-BS1)

Prepared: 09/20/21 Analyzed: 09/21/21

Perfluoro-4-oxapentanoic acid (PFMPA)	10.3	1.9	ng/L	9.64		106	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.3	1.9	ng/L	9.64		107	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.40	1.9	ng/L	9.16		103	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.21	1.9	ng/L	9.06		90.7	71-127			
Perfluoroundecanoic acid (PFUnA)	8.12	1.9	ng/L	9.64		84.2	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.99	1.9	ng/L	9.64		93.3	50-150			
Perfluoroheptanoic acid (PFHpA)	9.26	1.9	ng/L	9.64		96.1	72-130			
Perfluorooctanoic acid (PFOA)	8.73	1.9	ng/L	9.64		90.6	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.09	1.9	ng/L	8.91		90.7	65-140			
Perfluorononanoic acid (PFNA)	9.22	1.9	ng/L	9.64		95.7	69-130			

LCS Dup (B290484-BS1)

Prepared: 09/20/21 Analyzed: 09/21/21

Perfluorobutanoic acid (PFBA)	8.58	1.9	ng/L	9.72		88.2	73-129	2.34	30	
Perfluorobutanesulfonic acid (PFBS)	7.43	1.9	ng/L	8.61		86.3	72-130	4.25	30	
Perfluoropentanoic acid (PFPeA)	8.43	1.9	ng/L	9.72		86.7	72-129	0.181	30	
Perfluorohexanoic acid (PFHxA)	8.39	1.9	ng/L	9.72		86.2	72-129	0.724	30	
11Cl-PF3OUdS (F53B Minor)	7.61	1.9	ng/L	9.16		83.1	50-150	4.36	30	
9Cl-PF3ONS (F53B Major)	7.58	1.9	ng/L	9.06		83.6	50-150	0.915	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.48	1.9	ng/L	9.16		81.6	50-150	5.70	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.37	1.9	ng/L	9.72		75.8	50-150	5.37	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.41	1.9	ng/L	9.33		90.1	67-138	8.02	30	
Perfluorodecanoic acid (PFDA)	7.52	1.9	ng/L	9.72		77.3	71-129	4.37	30	
Perfluorododecanoic acid (PFDoA)	8.59	1.9	ng/L	9.72		88.4	72-134	4.83	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.46	1.9	ng/L	8.65		109	50-150	4.21	30	
Perfluoroheptanesulfonic acid (PFHpS)	8.61	1.9	ng/L	9.29		92.7	69-134	0.972	30	
N-EtFOSAA	9.26	1.9	ng/L	9.72		95.2	61-135	6.12	30	
N-MeFOSAA	9.80	1.9	ng/L	9.72		101	65-136	3.51	30	
Perfluorotetradecanoic acid (PFTA)	7.51	1.9	ng/L	9.72		77.2	71-132	9.14	30	
Perfluorotridecanoic acid (PFTrDA)	7.58	1.9	ng/L	9.72		77.9	65-144	9.24	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.40	1.9	ng/L	9.09		92.4	63-143	2.43	30	
Perfluorodecanesulfonic acid (PFDS)	8.08	1.9	ng/L	9.38		86.1	53-142	8.61	30	
Perfluorooctanesulfonamide (FOSA)	8.21	1.9	ng/L	9.72		84.4	67-137	3.78	30	
Perfluorononanesulfonic acid (PFNS)	7.92	1.9	ng/L	9.33		84.9	69-127	8.58	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.49	1.9	ng/L	9.72		87.3	50-150	1.77	30	
Perfluoro-1-butanesulfonamide (FBSA)	9.02	1.9	ng/L	9.72		92.8	50-150	7.22	30	
Perfluorohexanesulfonic acid (PFHxS)	7.58	1.9	ng/L	8.85		85.6	68-131	1.63	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.77	1.9	ng/L	9.72		100	50-150	4.89	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.1	1.9	ng/L	9.72		104	50-150	1.35	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.74	1.9	ng/L	9.24		94.6	64-140	7.29	30	
Perfluoropentanesulfonic acid (PFPeS)	7.30	1.9	ng/L	9.14		79.9	71-127	11.8	30	
Perfluoroundecanoic acid (PFUnA)	7.54	1.9	ng/L	9.72		77.5	69-133	7.43	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.69	1.9	ng/L	9.72		89.4	50-150	3.36	30	
Perfluoroheptanoic acid (PFHpA)	9.04	1.9	ng/L	9.72		93.0	72-130	2.45	30	
Perfluorooctanoic acid (PFOA)	8.95	1.9	ng/L	9.72		92.1	71-133	2.46	30	
Perfluorooctanesulfonic acid (PFOS)	7.78	1.9	ng/L	8.99		86.5	65-140	3.85	30	
Perfluorononanoic acid (PFNA)	8.93	1.9	ng/L	9.72		91.8	69-130	3.23	30	

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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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
D	Sample analyzed at a dilution.
E	Reported result is estimated. Value reported over verified calibration range.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-302 (2110272-01)		Lab File ID: 2110272-01.d				Analyzed: 09/17/21 12:52			
M8FOSA	293027.3	4.01255	369,591.00	4.01255	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	95093.95	2.505033	158,816.00	2.505033	60	50 - 150	0.0000	+/-0.50	
M2PFTA	1313460	4.32155	1,328,511.00	4.32155	99	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	90175.99	3.810767	92,666.00	3.810767	97	50 - 150	0.0000	+/-0.50	
MPFBA	563206.3	1.0917	585,136.00	1.0917	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	238066.4	2.847483	198,070.00	2.847483	120	50 - 150	0.0000	+/-0.50	
M6PFDA	726131	3.811283	707,695.00	3.811283	103	50 - 150	0.0000	+/-0.50	
M3PFBS	163827	1.911533	165,269.00	1.911533	99	50 - 150	0.0000	+/-0.50	
M7PFUnA	1016555	3.954033	942,111.00	3.954033	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	56597.03	3.453267	79,940.00	3.453267	71	50 - 150	0.0000	+/-0.50	
M5PFPeA	560048.8	1.741117	583,615.00	1.741117	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	879884.4	2.596983	912,809.00	2.588767	96	50 - 150	0.0082	+/-0.50	
M3PFHxS	119770.2	3.226417	118,966.00	3.226417	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	850816.3	3.195017	872,221.00	3.186933	98	50 - 150	0.0081	+/-0.50	
M8PFOA	726593.3	3.469917	754,054.00	3.469917	96	50 - 150	0.0000	+/-0.50	
M8PFOS	124543.8	3.660133	125,235.00	3.660133	99	50 - 150	0.0000	+/-0.50	
M9PFNA	618483.1	3.661183	634,069.00	3.661183	98	50 - 150	0.0000	+/-0.50	
MPFDoA	958073.1	4.08865	983,581.00	4.08865	97	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	187939.4	3.9615	188,700.00	3.9615	100	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	245012.9	3.88175	272,416.00	3.88175	90	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-2 (21I0272-02RE1) Lab File ID: 21I0272-02RE1.d Analyzed: 09/20/21 15:40									
M8FOSA	236509.9	4.00455	218,614.00	4.01255	108	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	59621.48	2.57895	103,259.00	2.57895	58	50 - 150	0.0000	+/-0.50	
M2PFTA	1098722	4.362167	915,422.00	4.3703	120	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	68884.31	3.842967	71,083.00	3.842967	97	50 - 150	0.0000	+/-0.50	
MPFBA	416079.5	1.116633	362,574.00	1.116633	115	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	141725	2.904767	128,250.00	2.904767	111	50 - 150	0.0000	+/-0.50	
M6PFDA	561809.4	3.843467	458,138.00	3.843467	123	50 - 150	0.0000	+/-0.50	
M3PFBS	118075.8	1.96145	94,406.00	1.969733	125	50 - 150	-0.0083	+/-0.50	
M7PFUnA	796925.9	3.986	656,922.00	3.986	121	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	46034.37	3.485367	48,940.00	3.493333	94	50 - 150	-0.0080	+/-0.50	
M5PFPeA	473805.5	1.791367	370,457.00	1.791367	128	50 - 150	0.0000	+/-0.50	
M5PFHxA	692360.5	2.663233	551,718.00	2.663233	125	50 - 150	0.0000	+/-0.50	
M3PFHxS	82250.35	3.25875	65,016.00	3.25875	127	50 - 150	0.0000	+/-0.50	
M4PFHpA	670352.6	3.227617	534,996.00	3.227617	125	50 - 150	0.0000	+/-0.50	
M8PFOA	601740.9	3.50185	486,421.00	3.50185	124	50 - 150	0.0000	+/-0.50	
M8PFOS	94157.73	3.6841	73,070.00	3.6841	129	50 - 150	0.0000	+/-0.50	
M9PFNA	489503.8	3.685133	399,608.00	3.685133	122	50 - 150	0.0000	+/-0.50	
MPFDoA	780479.6	4.120767	673,085.00	4.1288	116	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	166600.3	3.993467	138,654.00	4.001467	120	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	191048.4	3.9139	175,092.00	3.921883	109	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-3 (2110272-03RE1)			Lab File ID: 2110272-03RE1.d			Analyzed: 09/20/21 15:47			
M8FOSA	217376.5	4.01255	218,614.00	4.01255	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	47490.55	2.570733	103,259.00	2.57895	46	50 - 150	-0.0082	+/-0.50	*
M2PFTA	911604.2	4.362167	915,422.00	4.3703	100	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	57792	3.842967	71,083.00	3.842967	81	50 - 150	0.0000	+/-0.50	
MPFBA	437490.9	1.116633	362,574.00	1.116633	121	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	155294.7	2.896583	128,250.00	2.904767	121	50 - 150	-0.0082	+/-0.50	
M6PFDA	502013.4	3.843467	458,138.00	3.843467	110	50 - 150	0.0000	+/-0.50	
M3PFBS	108278.8	1.96145	94,406.00	1.969733	115	50 - 150	-0.0083	+/-0.50	
M7PFUnA	669566	3.986	656,922.00	3.986	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	37918.68	3.48535	48,940.00	3.493333	77	50 - 150	-0.0080	+/-0.50	
M5PFPeA	443108.7	1.791367	370,457.00	1.791367	120	50 - 150	0.0000	+/-0.50	
M5PFHxA	634636.3	2.655	551,718.00	2.663233	115	50 - 150	-0.0082	+/-0.50	
M3PFHxS	72275.3	3.25875	65,016.00	3.25875	111	50 - 150	0.0000	+/-0.50	
M4PFHpA	608572.3	3.227617	534,996.00	3.227617	114	50 - 150	0.0000	+/-0.50	
M8PFOA	537297.1	3.50185	486,421.00	3.50185	110	50 - 150	0.0000	+/-0.50	
M8PFOS	80523.12	3.6841	73,070.00	3.6841	110	50 - 150	0.0000	+/-0.50	
M9PFNA	437334.9	3.685133	399,608.00	3.685133	109	50 - 150	0.0000	+/-0.50	
MPFDoA	710094.1	4.120767	673,085.00	4.1288	105	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	141472.8	3.993467	138,654.00	4.001467	102	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	168179.8	3.9139	175,092.00	3.921883	96	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-K (2110272-04)		Lab File ID: 2110272-04.d				Analyzed: 09/17/21 13:13			
M8FOSA	174498.3	4.01255	369,591.00	4.01255	47	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	88020.01	2.505033	158,816.00	2.505033	55	50 - 150	0.0000	+/-0.50	
M2PFTA	1004625	4.32155	1,328,511.00	4.32155	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	80646.11	3.810767	92,666.00	3.810767	87	50 - 150	0.0000	+/-0.50	
MPFBA	513313	1.0917	585,136.00	1.0917	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	287744.9	2.847483	198,070.00	2.847483	145	50 - 150	0.0000	+/-0.50	
M6PFDA	734466.4	3.811283	707,695.00	3.811283	104	50 - 150	0.0000	+/-0.50	
M3PFBS	155563.8	1.911533	165,269.00	1.911533	94	50 - 150	0.0000	+/-0.50	
M7PFUnA	970316.8	3.954033	942,111.00	3.954033	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	52958.18	3.453267	79,940.00	3.453267	66	50 - 150	0.0000	+/-0.50	
M5PFPeA	554604.6	1.741117	583,615.00	1.741117	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	872127.8	2.588767	912,809.00	2.588767	96	50 - 150	0.0000	+/-0.50	
M3PFHxS	105965.9	3.226417	118,966.00	3.226417	89	50 - 150	0.0000	+/-0.50	
M4PFHpA	844316.6	3.186933	872,221.00	3.186933	97	50 - 150	0.0000	+/-0.50	
M8PFOA	744350.2	3.469917	754,054.00	3.469917	99	50 - 150	0.0000	+/-0.50	
M8PFOS	116162.3	3.66015	125,235.00	3.660133	93	50 - 150	0.0000	+/-0.50	
M9PFNA	590049.6	3.661183	634,069.00	3.661183	93	50 - 150	0.0000	+/-0.50	
MPFDoA	906923.6	4.08865	983,581.00	4.08865	92	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	173283.2	3.9615	188,700.00	3.9615	92	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	234792.6	3.88175	272,416.00	3.88175	86	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-K (2110272-04RE1) Lab File ID: 2110272-04RE1.d Analyzed: 09/21/21 18:03									
M8FOSA	88149.39	4.00455	298,565.00	4.01255	30	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	103543.8	2.51325	152,461.00	2.537883	68	50 - 150	-0.0246	+/-0.50	
M2PFTA	82373.4	4.3378	1,205,326.00	4.3378	07	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	87874.27	3.818733	111,876.00	3.827067	79	50 - 150	-0.0083	+/-0.50	
MPFBA	543173.6	1.100017	500,132.00	1.100017	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	272107.8	2.855667	168,519.00	2.872033	161	50 - 150	-0.0164	+/-0.50	*
M6PFDA	552325.6	3.81925	618,239.00	3.81925	89	50 - 150	0.0000	+/-0.50	
M3PFBS	156107	1.919817	128,141.00	1.9364	122	50 - 150	-0.0166	+/-0.50	
M7PFUnA	555310.1	3.962017	896,694.00	3.970017	62	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	49039.09	3.461417	84,421.00	3.469383	58	50 - 150	-0.0080	+/-0.50	
M5PFPeA	592146.4	1.749417	507,610.00	1.757717	117	50 - 150	-0.0083	+/-0.50	
M5PFHxA	896410.4	2.605183	753,606.00	2.621617	119	50 - 150	-0.0164	+/-0.50	
M3PFHxS	106562.5	3.2345	96,253.00	3.242583	111	50 - 150	-0.0081	+/-0.50	
M4PFHpA	819093.3	3.195017	712,666.00	3.203083	115	50 - 150	-0.0081	+/-0.50	
M8PFOA	723099.3	3.4779	632,450.00	3.4779	114	50 - 150	0.0000	+/-0.50	
M8PFOS	92944.63	3.660133	100,319.00	3.668133	93	50 - 150	-0.0080	+/-0.50	
M9PFNA	560388.5	3.661183	536,176.00	3.669167	105	50 - 150	-0.0080	+/-0.50	
MPFDoA	325398.7	4.096633	882,883.00	4.104633	37	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	122556.6	3.9695	184,789.00	3.977483	66	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	162991.3	3.889733	221,851.00	3.897717	73	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-19 (S) (2110272-05) Lab File ID: 2110272-05.d Analyzed: 09/17/21 13:20									
M8FOSA	160058.6	4.00455	369,591.00	4.01255	43	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	97904.59	2.496817	158,816.00	2.505033	62	50 - 150	-0.0082	+/-0.50	
M2PFTA	740304.9	4.32155	1,328,511.00	4.32155	56	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	91941.77	3.810767	92,666.00	3.810767	99	50 - 150	0.0000	+/-0.50	
MPFBA	427388.7	1.0917	585,136.00	1.0917	73	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	251704.3	2.8393	198,070.00	2.847483	127	50 - 150	-0.0082	+/-0.50	
M6PFDA	661833.7	3.803317	707,695.00	3.811283	94	50 - 150	-0.0080	+/-0.50	
M3PFBS	151493.2	1.911533	165,269.00	1.911533	92	50 - 150	0.0000	+/-0.50	
M7PFUnA	916116.8	3.946033	942,111.00	3.954033	97	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	71904.77	3.453267	79,940.00	3.453267	90	50 - 150	0.0000	+/-0.50	
M5PFPeA	506993.2	1.731383	583,615.00	1.741117	87	50 - 150	-0.0097	+/-0.50	
M5PFHxA	833416.8	2.58055	912,809.00	2.588767	91	50 - 150	-0.0082	+/-0.50	
M3PFHxS	102263.7	3.226417	118,966.00	3.226417	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	788014.8	3.186933	872,221.00	3.186933	90	50 - 150	0.0000	+/-0.50	
M8PFOA	733171.1	3.469917	754,054.00	3.469917	97	50 - 150	0.0000	+/-0.50	
M8PFOS	108385.3	3.65215	125,235.00	3.660133	87	50 - 150	-0.0080	+/-0.50	
M9PFNA	580720.5	3.6532	634,069.00	3.661183	92	50 - 150	-0.0080	+/-0.50	
MPFDoA	872480.6	4.08865	983,581.00	4.08865	89	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	166249.8	3.9535	188,700.00	3.9615	88	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	210439.5	3.88175	272,416.00	3.88175	77	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-19 (S) (2110272-05RE1) Lab File ID: 2110272-05RE1.d Analyzed: 09/20/21 15:54									
M8FOSA	66299.16	4.00455	218,614.00	4.01255	30	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	77941.08	2.562517	103,259.00	2.57895	75	50 - 150	-0.0164	+/-0.50	
M2PFTA	143560.8	4.362167	915,422.00	4.3703	16	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	66350.29	3.842967	71,083.00	3.842967	93	50 - 150	0.0000	+/-0.50	
MPFBA	321250.4	1.116633	362,574.00	1.116633	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	131564.8	2.896583	128,250.00	2.904767	103	50 - 150	-0.0082	+/-0.50	
M6PFDA	366641.4	3.8355	458,138.00	3.843467	80	50 - 150	-0.0080	+/-0.50	
M3PFBS	108643.2	1.95315	94,406.00	1.969733	115	50 - 150	-0.0166	+/-0.50	
M7PFUnA	356914.8	3.986	656,922.00	3.986	54	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54603.26	3.485367	48,940.00	3.493333	112	50 - 150	-0.0080	+/-0.50	
M5PFPeA	412259.5	1.7826	370,457.00	1.791367	111	50 - 150	-0.0088	+/-0.50	
M5PFHxA	627253.8	2.646767	551,718.00	2.663233	114	50 - 150	-0.0165	+/-0.50	
M3PFHxS	75719.32	3.250667	65,016.00	3.25875	116	50 - 150	-0.0081	+/-0.50	
M4PFHpA	592698.9	3.219533	534,996.00	3.227617	111	50 - 150	-0.0081	+/-0.50	
M8PFOA	502974.3	3.493867	486,421.00	3.50185	103	50 - 150	-0.0080	+/-0.50	
M8PFOS	65249.45	3.6841	73,070.00	3.6841	89	50 - 150	0.0000	+/-0.50	
M9PFNA	381050.4	3.685133	399,608.00	3.685133	95	50 - 150	0.0000	+/-0.50	
MPFDoA	272093.6	4.120767	673,085.00	4.1288	40	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	76089.26	3.993467	138,654.00	4.001467	55	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	102287.5	3.9139	175,092.00	3.921883	58	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-300 (2110272-06) Lab File ID: 2110272-06.d Analyzed: 09/15/21 20:26									
M8FOSA	89146.98	4.00455	264,454.00	4.01255	34	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	114791.1	2.505033	106,035.00	2.51325	108	50 - 150	-0.0082	+/-0.50	
M2PFTA	34270.55	4.329683	979,713.00	4.329683	03	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	74667.34	3.810767	62,559.00	3.810767	119	50 - 150	0.0000	+/-0.50	
MPFBA	441150.5	1.0917	467,144.00	1.0917	94	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	247342.5	2.8393	196,636.00	2.847483	126	50 - 150	-0.0082	+/-0.50	
M6PFDA	632757.2	3.811283	506,494.00	3.811283	125	50 - 150	0.0000	+/-0.50	
M3PFBS	159061.5	1.911533	117,013.00	1.911533	136	50 - 150	0.0000	+/-0.50	
M7PFUnA	564673.9	3.954033	708,269.00	3.954033	80	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	84639.68	3.453267	56,462.00	3.461417	150	50 - 150	-0.0082	+/-0.50	
M5PFPeA	577215.7	1.741117	454,641.00	1.741117	127	50 - 150	0.0000	+/-0.50	
M5PFHxA	897981.5	2.588767	675,515.00	2.596983	133	50 - 150	-0.0082	+/-0.50	
M3PFHxS	109811.3	3.226417	83,413.00	3.226417	132	50 - 150	0.0000	+/-0.50	
M4PFHpA	863842.6	3.186933	637,955.00	3.195017	135	50 - 150	-0.0081	+/-0.50	
M8PFOA	755457.9	3.469917	553,550.00	3.469917	136	50 - 150	0.0000	+/-0.50	
M8PFOS	106095.7	3.66015	91,091.00	3.660133	116	50 - 150	0.0000	+/-0.50	
M9PFNA	639070.6	3.661183	464,517.00	3.661183	138	50 - 150	0.0000	+/-0.50	
MPFDoA	235757	4.08865	721,060.00	4.08865	33	50 - 150	0.0000	+/-0.50	*
d5-NEtFOSAA	116052	3.9615	147,554.00	3.9615	79	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	168311.4	3.88175	178,646.00	3.889733	94	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-300 (2110272-06RE1) Lab File ID: 2110272-06RE1.d Analyzed: 09/20/21 16:02									
M8FOSA	50594.25	4.00455	218,614.00	4.01255	23	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	83647.66	2.562517	103,259.00	2.57895	81	50 - 150	-0.0164	+/-0.50	
M2PFTA	52143.98	4.362167	915,422.00	4.3703	06	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	67831.51	3.835017	71,083.00	3.842967	95	50 - 150	-0.0079	+/-0.50	
MPFBA	296686.3	1.116633	362,574.00	1.116633	82	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	145071.3	2.8884	128,250.00	2.904767	113	50 - 150	-0.0164	+/-0.50	
M6PFDA	354594.6	3.835517	458,138.00	3.843467	77	50 - 150	-0.0080	+/-0.50	
M3PFBS	102314.8	1.95315	94,406.00	1.969733	108	50 - 150	-0.0166	+/-0.50	
M7PFUnA	362371.8	3.986	656,922.00	3.986	55	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53702.3	3.485367	48,940.00	3.493333	110	50 - 150	-0.0080	+/-0.50	
M5PFPeA	389308.3	1.7743	370,457.00	1.791367	105	50 - 150	-0.0171	+/-0.50	
M5PFHxA	583188.1	2.646767	551,718.00	2.663233	106	50 - 150	-0.0165	+/-0.50	
M3PFHxS	66431.47	3.250667	65,016.00	3.25875	102	50 - 150	-0.0081	+/-0.50	
M4PFHpA	549416.1	3.219533	534,996.00	3.227617	103	50 - 150	-0.0081	+/-0.50	
M8PFOA	482865.7	3.493867	486,421.00	3.50185	99	50 - 150	-0.0080	+/-0.50	
M8PFOS	66746.61	3.6841	73,070.00	3.6841	91	50 - 150	0.0000	+/-0.50	
M9PFNA	359869.1	3.685133	399,608.00	3.685133	90	50 - 150	0.0000	+/-0.50	
MPFDoA	200792.2	4.120767	673,085.00	4.1288	30	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	82451.94	3.993467	138,654.00	4.001467	59	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	111104.4	3.9139	175,092.00	3.921883	63	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-19 (M) (2110272-07) Lab File ID: 2110272-07.d Analyzed: 09/15/21 20:34									
M8FOSA	181225.1	4.00455	264,454.00	4.01255	69	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	123690.8	2.505033	106,035.00	2.51325	117	50 - 150	-0.0082	+/-0.50	
M2PFTA	60709.61	4.329683	979,713.00	4.329683	06	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	99632.58	3.810767	62,559.00	3.810767	159	50 - 150	0.0000	+/-0.50	*
MPFBA	464074.9	1.100017	467,144.00	1.0917	99	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	283183.4	2.8393	196,636.00	2.847483	144	50 - 150	-0.0082	+/-0.50	
M6PFDA	594689.5	3.811283	506,494.00	3.811283	117	50 - 150	0.0000	+/-0.50	
M3PFBS	154538	1.911533	117,013.00	1.911533	132	50 - 150	0.0000	+/-0.50	
M7PFUnA	649787.2	3.954033	708,269.00	3.954033	92	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	69927.2	3.453267	56,462.00	3.461417	124	50 - 150	-0.0082	+/-0.50	
M5PFPeA	535337.9	1.741117	454,641.00	1.741117	118	50 - 150	0.0000	+/-0.50	
M5PFHxA	851006.1	2.588767	675,515.00	2.596983	126	50 - 150	-0.0082	+/-0.50	
M3PFHxS	108201.6	3.226417	83,413.00	3.226417	130	50 - 150	0.0000	+/-0.50	
M4PFHpA	807336.7	3.186933	637,955.00	3.195017	127	50 - 150	-0.0081	+/-0.50	
M8PFOA	777370.1	3.469917	553,550.00	3.469917	140	50 - 150	0.0000	+/-0.50	
M8PFOS	112956.3	3.660133	91,091.00	3.660133	124	50 - 150	0.0000	+/-0.50	
M9PFNA	586442.8	3.653183	464,517.00	3.661183	126	50 - 150	-0.0080	+/-0.50	
MPFDoA	377617.6	4.08865	721,060.00	4.08865	52	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	138926.1	3.9615	147,554.00	3.9615	94	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	172129.6	3.88175	178,646.00	3.889733	96	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-19 (M) (2110272-07RE1)			Lab File ID: 2110272-07RE1.d			Analyzed: 09/20/21 16:09			
M8FOSA	23184.42	4.00455	218,614.00	4.01255	11	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	81101.6	2.5543	103,259.00	2.57895	79	50 - 150	-0.0246	+/-0.50	
M2PFTA	63089.97	4.362167	915,422.00	4.3703	07	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	60782.73	3.835017	71,083.00	3.842967	86	50 - 150	-0.0079	+/-0.50	
MPFBA	379391.5	1.116633	362,574.00	1.116633	105	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	148119.2	2.8884	128,250.00	2.904767	115	50 - 150	-0.0164	+/-0.50	
M6PFDA	286627.8	3.8355	458,138.00	3.843467	63	50 - 150	-0.0080	+/-0.50	
M3PFBS	113065.9	1.95315	94,406.00	1.969733	120	50 - 150	-0.0166	+/-0.50	
M7PFUnA	204176.1	3.978017	656,922.00	3.986	31	50 - 150	-0.0080	+/-0.50	*
M2-6:2FTS	55984.09	3.485367	48,940.00	3.493333	114	50 - 150	-0.0080	+/-0.50	
M5PFPeA	431864.6	1.7743	370,457.00	1.791367	117	50 - 150	-0.0171	+/-0.50	
M5PFHxA	649653.7	2.638533	551,718.00	2.663233	118	50 - 150	-0.0247	+/-0.50	
M3PFHxS	75691.62	3.250667	65,016.00	3.25875	116	50 - 150	-0.0081	+/-0.50	
M4PFHpA	606449.4	3.219533	534,996.00	3.227617	113	50 - 150	-0.0081	+/-0.50	
M8PFOA	517460.9	3.493867	486,421.00	3.50185	106	50 - 150	-0.0080	+/-0.50	
M8PFOS	54384.38	3.676117	73,070.00	3.6841	74	50 - 150	-0.0080	+/-0.50	
M9PFNA	370769.4	3.685133	399,608.00	3.685133	93	50 - 150	0.0000	+/-0.50	
MPFDoA	137631	4.120767	673,085.00	4.1288	20	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	44407.26	3.985483	138,654.00	4.001467	32	50 - 150	-0.0160	+/-0.50	*
d3-NMeFOSAA	69751.59	3.9139	175,092.00	3.921883	40	50 - 150	-0.0080	+/-0.50	*

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-S (MW) (2110272-08) Lab File ID: 2110272-08.d Analyzed: 09/15/21 20:41									
M8FOSA	206053	4.00455	264,454.00	4.01255	78	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	85858.25	2.505033	106,035.00	2.51325	81	50 - 150	-0.0082	+/-0.50	
M2PFTA	974369.3	4.329683	979,713.00	4.329683	99	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	74426.35	3.810767	62,559.00	3.810767	119	50 - 150	0.0000	+/-0.50	
MPFBA	468496.4	1.0917	467,144.00	1.0917	100	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	281128	2.847483	196,636.00	2.847483	143	50 - 150	0.0000	+/-0.50	
M6PFDA	640062.5	3.811283	506,494.00	3.811283	126	50 - 150	0.0000	+/-0.50	
M3PFBS	145962.9	1.911533	117,013.00	1.911533	125	50 - 150	0.0000	+/-0.50	
M7PFUnA	891197.8	3.954033	708,269.00	3.954033	126	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	52524.18	3.453267	56,462.00	3.461417	93	50 - 150	-0.0082	+/-0.50	
M5PFPeA	513560.3	1.741117	454,641.00	1.741117	113	50 - 150	0.0000	+/-0.50	
M5PFHxA	808824.9	2.588767	675,515.00	2.596983	120	50 - 150	-0.0082	+/-0.50	
M3PFHxS	104394.1	3.226417	83,413.00	3.226417	125	50 - 150	0.0000	+/-0.50	
M4PFHpA	783049.8	3.186933	637,955.00	3.195017	123	50 - 150	-0.0081	+/-0.50	
M8PFOA	721167.5	3.469917	553,550.00	3.469917	130	50 - 150	0.0000	+/-0.50	
M8PFOS	105101.7	3.660133	91,091.00	3.660133	115	50 - 150	0.0000	+/-0.50	
M9PFNA	562112.8	3.661183	464,517.00	3.661183	121	50 - 150	0.0000	+/-0.50	
MPFDoA	823263.7	4.08865	721,060.00	4.08865	114	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	173314.2	3.9615	147,554.00	3.9615	117	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	212206.2	3.88175	178,646.00	3.889733	119	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-S (S) (2110272-09RE1) Lab File ID: 2110272-09RE1.d Analyzed: 09/20/21 16:16									
M8FOSA	239651	4.00455	218,614.00	4.01255	110	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	55253.3	2.562517	103,259.00	2.57895	54	50 - 150	-0.0164	+/-0.50	
M2PFTA	1088887	4.362167	915,422.00	4.3703	119	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	75475.87	3.835017	71,083.00	3.842967	106	50 - 150	-0.0079	+/-0.50	
MPFBA	489417.5	1.116633	362,574.00	1.116633	135	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	136267.6	2.8884	128,250.00	2.904767	106	50 - 150	-0.0164	+/-0.50	
M6PFDA	585620.7	3.8355	458,138.00	3.843467	128	50 - 150	-0.0080	+/-0.50	
M3PFBS	118212.7	1.95315	94,406.00	1.969733	125	50 - 150	-0.0166	+/-0.50	
M7PFUnA	755689.9	3.986	656,922.00	3.986	115	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	64389.04	3.48535	48,940.00	3.493333	132	50 - 150	-0.0080	+/-0.50	
M5PFPeA	484752.2	1.7826	370,457.00	1.791367	131	50 - 150	-0.0088	+/-0.50	
M5PFHxA	698211.3	2.646767	551,718.00	2.663233	127	50 - 150	-0.0165	+/-0.50	
M3PFHxS	81804.17	3.250667	65,016.00	3.25875	126	50 - 150	-0.0081	+/-0.50	
M4PFHpA	675023.6	3.219533	534,996.00	3.227617	126	50 - 150	-0.0081	+/-0.50	
M8PFOA	598753.4	3.493867	486,421.00	3.50185	123	50 - 150	-0.0080	+/-0.50	
M8PFOS	94226.3	3.6841	73,070.00	3.6841	129	50 - 150	0.0000	+/-0.50	
M9PFNA	497225.6	3.685133	399,608.00	3.685133	124	50 - 150	0.0000	+/-0.50	
MPFDoA	768773.5	4.120767	673,085.00	4.1288	114	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	152114.1	3.993467	138,654.00	4.001467	110	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	192693.1	3.9139	175,092.00	3.921883	110	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
<div> HW-W (M) (2110272-10) Lab File ID: 2110272-10.d Analyzed: 09/15/21 20:55 </div>									
M8FOSA	322959.3	4.00455	264,454.00	4.01255	122	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	92171.34	2.505033	106,035.00	2.51325	87	50 - 150	-0.0082	+/-0.50	
M2PFTA	1204946	4.329683	979,713.00	4.329683	123	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	88997.16	3.810767	62,559.00	3.810767	142	50 - 150	0.0000	+/-0.50	
MPFBA	510618	1.0917	467,144.00	1.0917	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	339446.4	2.8393	196,636.00	2.847483	173	50 - 150	-0.0082	+/-0.50	*
M6PFDA	698264.8	3.811283	506,494.00	3.811283	138	50 - 150	0.0000	+/-0.50	
M3PFBS	158919.9	1.911533	117,013.00	1.911533	136	50 - 150	0.0000	+/-0.50	
M7PFUnA	955705.8	3.954033	708,269.00	3.954033	135	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54276.04	3.453267	56,462.00	3.461417	96	50 - 150	-0.0082	+/-0.50	
M5PFPeA	570574.2	1.741117	454,641.00	1.741117	125	50 - 150	0.0000	+/-0.50	
M5PFHxA	890583.2	2.588767	675,515.00	2.596983	132	50 - 150	-0.0082	+/-0.50	
M3PFHxS	110309.9	3.226417	83,413.00	3.226417	132	50 - 150	0.0000	+/-0.50	
M4PFHpA	839461.3	3.186933	637,955.00	3.195017	132	50 - 150	-0.0081	+/-0.50	
M8PFOA	763236.4	3.469917	553,550.00	3.469917	138	50 - 150	0.0000	+/-0.50	
M8PFOS	113801.2	3.660133	91,091.00	3.660133	125	50 - 150	0.0000	+/-0.50	
M9PFNA	602847.9	3.661183	464,517.00	3.661183	130	50 - 150	0.0000	+/-0.50	
MPFDoA	960187.5	4.08865	721,060.00	4.08865	133	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	200188.2	3.9615	147,554.00	3.9615	136	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	239010.9	3.88175	178,646.00	3.889733	134	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-W (D) (2110272-11) Lab File ID: 2110272-11.d Analyzed: 09/15/21 21:02									
M8FOSA	310412.4	4.00455	264,454.00	4.01255	117	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	90951.89	2.505033	106,035.00	2.51325	86	50 - 150	-0.0082	+/-0.50	
M2PFTA	1196705	4.329683	979,713.00	4.329683	122	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	83626.63	3.810767	62,559.00	3.810767	134	50 - 150	0.0000	+/-0.50	
MPFBA	498610.6	1.0917	467,144.00	1.0917	107	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	325987.1	2.847483	196,636.00	2.847483	166	50 - 150	0.0000	+/-0.50	*
M6PFDA	668466.6	3.811283	506,494.00	3.811283	132	50 - 150	0.0000	+/-0.50	
M3PFBS	152214.3	1.911533	117,013.00	1.911533	130	50 - 150	0.0000	+/-0.50	
M7PFUnA	969397.4	3.954033	708,269.00	3.954033	137	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54751.54	3.453267	56,462.00	3.461417	97	50 - 150	-0.0082	+/-0.50	
M5PFPeA	547760.6	1.741117	454,641.00	1.741117	120	50 - 150	0.0000	+/-0.50	
M5PFHxA	862710.7	2.588767	675,515.00	2.596983	128	50 - 150	-0.0082	+/-0.50	
M3PFHxS	105444	3.226417	83,413.00	3.226417	126	50 - 150	0.0000	+/-0.50	
M4PFHpA	808228.1	3.186933	637,955.00	3.195017	127	50 - 150	-0.0081	+/-0.50	
M8PFOA	730460.9	3.469917	553,550.00	3.469917	132	50 - 150	0.0000	+/-0.50	
M8PFOS	107973.6	3.66015	91,091.00	3.660133	119	50 - 150	0.0000	+/-0.50	
M9PFNA	595885.1	3.661183	464,517.00	3.661183	128	50 - 150	0.0000	+/-0.50	
MPFDoA	928199.2	4.08865	721,060.00	4.08865	129	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	181761.7	3.9615	147,554.00	3.9615	123	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244814.5	3.88175	178,646.00	3.889733	137	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-W (DD) (2110272-12) Lab File ID: 2110272-12.d Analyzed: 09/15/21 21:10									
M8FOSA	270363.4	4.01255	264,454.00	4.01255	102	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87783.14	2.51325	106,035.00	2.51325	83	50 - 150	0.0000	+/-0.50	
M2PFTA	1058376	4.329683	979,713.00	4.329683	108	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	81073.42	3.810767	62,559.00	3.810767	130	50 - 150	0.0000	+/-0.50	
MPFBA	459943.9	1.0917	467,144.00	1.0917	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	305925.4	2.847483	196,636.00	2.847483	156	50 - 150	0.0000	+/-0.50	*
M6PFDA	671831	3.811283	506,494.00	3.811283	133	50 - 150	0.0000	+/-0.50	
M3PFBS	140938.9	1.911533	117,013.00	1.911533	120	50 - 150	0.0000	+/-0.50	
M7PFUnA	853307.9	3.954033	708,269.00	3.954033	120	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	51128.85	3.461417	56,462.00	3.461417	91	50 - 150	0.0000	+/-0.50	
M5PFPeA	503185.6	1.741117	454,641.00	1.741117	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	792750.4	2.596983	675,515.00	2.596983	117	50 - 150	0.0000	+/-0.50	
M3PFHxS	100838.7	3.226417	83,413.00	3.226417	121	50 - 150	0.0000	+/-0.50	
M4PFHpA	766305.8	3.195017	637,955.00	3.195017	120	50 - 150	0.0000	+/-0.50	
M8PFOA	702833.9	3.469917	553,550.00	3.469917	127	50 - 150	0.0000	+/-0.50	
M8PFOS	108453.6	3.66015	91,091.00	3.660133	119	50 - 150	0.0000	+/-0.50	
M9PFNA	571555.8	3.661183	464,517.00	3.661183	123	50 - 150	0.0000	+/-0.50	
MPFDoA	787356.1	4.08865	721,060.00	4.08865	109	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	169257.5	3.9615	147,554.00	3.9615	115	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	217455.5	3.889733	178,646.00	3.889733	122	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
RB-1 (S) (2110272-13) Lab File ID: 2110272-13.d Analyzed: 09/15/21 21:17									
M8FOSA	283110.8	4.00455	264,454.00	4.01255	107	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	161844.3	2.51325	106,035.00	2.51325	153	50 - 150	0.0000	+/-0.50	*
M2PFTA	1240045	4.329683	979,713.00	4.329683	127	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	129303.7	3.810767	62,559.00	3.810767	207	50 - 150	0.0000	+/-0.50	*
MPFBA	442701.9	1.100017	467,144.00	1.0917	95	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	351307.8	2.847483	196,636.00	2.847483	179	50 - 150	0.0000	+/-0.50	*
M6PFDA	711697.5	3.811283	506,494.00	3.811283	141	50 - 150	0.0000	+/-0.50	
M3PFBS	151092	1.911533	117,013.00	1.911533	129	50 - 150	0.0000	+/-0.50	
M7PFUnA	1031265	3.954033	708,269.00	3.954033	146	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	87268.15	3.453267	56,462.00	3.461417	155	50 - 150	-0.0082	+/-0.50	*
M5PFPeA	500641.4	1.741117	454,641.00	1.741117	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	849007.1	2.596983	675,515.00	2.596983	126	50 - 150	0.0000	+/-0.50	
M3PFHxS	111391.5	3.226417	83,413.00	3.226417	134	50 - 150	0.0000	+/-0.50	
M4PFHpA	827929.5	3.195017	637,955.00	3.195017	130	50 - 150	0.0000	+/-0.50	
M8PFOA	742313.1	3.469917	553,550.00	3.469917	134	50 - 150	0.0000	+/-0.50	
M8PFOS	113613	3.66015	91,091.00	3.660133	125	50 - 150	0.0000	+/-0.50	
M9PFNA	591611.8	3.661183	464,517.00	3.661183	127	50 - 150	0.0000	+/-0.50	
MPFDoA	921918.3	4.08865	721,060.00	4.08865	128	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	187403.5	3.9615	147,554.00	3.9615	127	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	192585.4	3.88175	178,646.00	3.889733	108	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
RB-1 (M) (21I0272-14) Lab File ID: 21I0272-14.d Analyzed: 09/15/21 21:24									
M8FOSA	289529.4	4.00455	264,454.00	4.01255	109	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	89379.09	2.51325	106,035.00	2.51325	84	50 - 150	0.0000	+/-0.50	
M2PFTA	1232775	4.329683	979,713.00	4.329683	126	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	82389.35	3.810767	62,559.00	3.810767	132	50 - 150	0.0000	+/-0.50	
MPFBA	465910.5	1.0917	467,144.00	1.0917	100	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	331068.6	2.847483	196,636.00	2.847483	168	50 - 150	0.0000	+/-0.50	*
M6PFDA	657409.3	3.811283	506,494.00	3.811283	130	50 - 150	0.0000	+/-0.50	
M3PFBS	148611.7	1.911533	117,013.00	1.911533	127	50 - 150	0.0000	+/-0.50	
M7PFUnA	891875.3	3.954033	708,269.00	3.954033	126	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53467.79	3.453267	56,462.00	3.461417	95	50 - 150	-0.0082	+/-0.50	
M5PFPeA	532905.7	1.741117	454,641.00	1.741117	117	50 - 150	0.0000	+/-0.50	
M5PFHxA	830523.7	2.596983	675,515.00	2.596983	123	50 - 150	0.0000	+/-0.50	
M3PFHxS	100949.2	3.226417	83,413.00	3.226417	121	50 - 150	0.0000	+/-0.50	
M4PFHpA	775586.9	3.195017	637,955.00	3.195017	122	50 - 150	0.0000	+/-0.50	
M8PFOA	696066.9	3.469917	553,550.00	3.469917	126	50 - 150	0.0000	+/-0.50	
M8PFOS	115372.6	3.660133	91,091.00	3.660133	127	50 - 150	0.0000	+/-0.50	
M9PFNA	575569.4	3.661183	464,517.00	3.661183	124	50 - 150	0.0000	+/-0.50	
MPFDoA	920930.7	4.08865	721,060.00	4.08865	128	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	181635.1	3.9615	147,554.00	3.9615	123	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	212475.2	3.88175	178,646.00	3.889733	119	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-U (S) (2110272-15)		Lab File ID: 2110272-15.d				Analyzed: 09/15/21 21:31			
M8FOSA	279458.7	4.00455	264,454.00	4.01255	106	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	98214.15	2.505033	106,035.00	2.51325	93	50 - 150	-0.0082	+/-0.50	
M2PFTA	1161002	4.329683	979,713.00	4.329683	119	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	86765.73	3.810767	62,559.00	3.810767	139	50 - 150	0.0000	+/-0.50	
MPFBA	397154.8	1.0917	467,144.00	1.0917	85	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	356373.8	2.847483	196,636.00	2.847483	181	50 - 150	0.0000	+/-0.50	*
M6PFDA	626317	3.811283	506,494.00	3.811283	124	50 - 150	0.0000	+/-0.50	
M3PFBS	134409	1.911533	117,013.00	1.911533	115	50 - 150	0.0000	+/-0.50	
M7PFUnA	899666.6	3.954033	708,269.00	3.954033	127	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	64686.79	3.453267	56,462.00	3.461417	115	50 - 150	-0.0082	+/-0.50	
M5PFPeA	471792.3	1.741117	454,641.00	1.741117	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	771887.2	2.588767	675,515.00	2.596983	114	50 - 150	-0.0082	+/-0.50	
M3PFHxS	96556.68	3.226417	83,413.00	3.226417	116	50 - 150	0.0000	+/-0.50	
M4PFHpA	746481.8	3.195017	637,955.00	3.195017	117	50 - 150	0.0000	+/-0.50	
M8PFOA	657785.4	3.469917	553,550.00	3.469917	119	50 - 150	0.0000	+/-0.50	
M8PFOS	104280.1	3.660133	91,091.00	3.660133	114	50 - 150	0.0000	+/-0.50	
M9PFNA	525848.3	3.661183	464,517.00	3.661183	113	50 - 150	0.0000	+/-0.50	
MPFDoA	893642.3	4.08865	721,060.00	4.08865	124	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172556.3	3.9615	147,554.00	3.9615	117	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	193779.1	3.88175	178,646.00	3.889733	108	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-U (M) (2110272-16RE1) Lab File ID: 2110272-16RE1.d Analyzed: 09/17/21 20:38									
M8FOSA	319766.1	4.00455	369,591.00	4.00455	87	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	106447.2	2.496817	158,816.00	2.496817	67	50 - 150	0.0000	+/-0.50	
M2PFTA	1351295	4.32155	1,328,511.00	4.32155	102	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	115976.3	3.8028	92,666.00	3.810767	125	50 - 150	-0.0080	+/-0.50	
MPFBA	591217.9	1.0917	585,136.00	1.0917	101	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	258252.8	2.8393	198,070.00	2.8393	130	50 - 150	0.0000	+/-0.50	
M6PFDA	785519.8	3.803317	707,695.00	3.803317	111	50 - 150	0.0000	+/-0.50	
M3PFBS	167565.3	1.90325	165,269.00	1.90325	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	1101372	3.946033	942,111.00	3.946033	117	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	57986.18	3.453267	79,940.00	3.453267	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	601227.4	1.731383	583,615.00	1.731383	103	50 - 150	0.0000	+/-0.50	
M5PFHxA	935981	2.58055	912,809.00	2.588767	103	50 - 150	-0.0082	+/-0.50	
M3PFHxS	115044.8	3.218333	118,966.00	3.218333	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	904151.6	3.186933	872,221.00	3.186933	104	50 - 150	0.0000	+/-0.50	
M8PFOA	832990.2	3.461933	754,054.00	3.469917	110	50 - 150	-0.0080	+/-0.50	
M8PFOS	121956.1	3.65215	125,235.00	3.65215	97	50 - 150	0.0000	+/-0.50	
M9PFNA	706821	3.6532	634,069.00	3.6532	111	50 - 150	0.0000	+/-0.50	
MPFDoA	1039733	4.08065	983,581.00	4.08065	106	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	202735.8	3.9535	188,700.00	3.9535	107	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	263460.2	3.88175	272,416.00	3.88175	97	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-U (D) (2110272-17RE1) Lab File ID: 2110272-17RE1.d Analyzed: 09/20/21 16:23									
M8FOSA	220696.7	4.00455	218,614.00	4.01255	101	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	60819.24	2.562517	103,259.00	2.57895	59	50 - 150	-0.0164	+/-0.50	
M2PFTA	980892.8	4.362167	915,422.00	4.3703	107	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	77217.14	3.835017	71,083.00	3.842967	109	50 - 150	-0.0079	+/-0.50	
MPFBA	432064.4	1.116633	362,574.00	1.116633	119	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	154896.2	2.8884	128,250.00	2.904767	121	50 - 150	-0.0164	+/-0.50	
M6PFDA	523897.2	3.8355	458,138.00	3.843467	114	50 - 150	-0.0080	+/-0.50	
M3PFBS	116021.5	1.95315	94,406.00	1.969733	123	50 - 150	-0.0166	+/-0.50	
M7PFUnA	704266.4	3.986	656,922.00	3.986	107	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	48928.57	3.485367	48,940.00	3.493333	100	50 - 150	-0.0080	+/-0.50	
M5PFPeA	463654.3	1.7826	370,457.00	1.791367	125	50 - 150	-0.0088	+/-0.50	
M5PFHxA	666113	2.646767	551,718.00	2.663233	121	50 - 150	-0.0165	+/-0.50	
M3PFHxS	81618.85	3.250667	65,016.00	3.25875	126	50 - 150	-0.0081	+/-0.50	
M4PFHpA	651256.6	3.219533	534,996.00	3.227617	122	50 - 150	-0.0081	+/-0.50	
M8PFOA	584782.8	3.493867	486,421.00	3.50185	120	50 - 150	-0.0080	+/-0.50	
M8PFOS	89799.98	3.6841	73,070.00	3.6841	123	50 - 150	0.0000	+/-0.50	
M9PFNA	476846.7	3.685133	399,608.00	3.685133	119	50 - 150	0.0000	+/-0.50	
MPFDoA	701359.5	4.120767	673,085.00	4.1288	104	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	129354.7	3.993467	138,654.00	4.001467	93	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	174484	3.9139	175,092.00	3.921883	100	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B289938-BLK1) Lab File ID: B289938-BLK1.d Analyzed: 09/17/21 12:08									
M8FOSA	295559.5	4.01255	369,591.00	4.01255	80	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	140015.4	2.505033	158,816.00	2.505033	88	50 - 150	0.0000	+/-0.50	
M2PFTA	1229168	4.32155	1,328,511.00	4.32155	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	95579.13	3.810767	92,666.00	3.810767	103	50 - 150	0.0000	+/-0.50	
MPFBA	616233.4	1.0917	585,136.00	1.0917	105	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	254309.8	2.847483	198,070.00	2.847483	128	50 - 150	0.0000	+/-0.50	
M6PFDA	667717.1	3.811283	707,695.00	3.811283	94	50 - 150	0.0000	+/-0.50	
M3PFBS	153411	1.911533	165,269.00	1.911533	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	947319.6	3.954033	942,111.00	3.954033	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	69899.54	3.453267	79,940.00	3.453267	87	50 - 150	0.0000	+/-0.50	
M5PFPeA	578430.9	1.741117	583,615.00	1.741117	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	883944.3	2.588767	912,809.00	2.588767	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	104795.1	3.226417	118,966.00	3.226417	88	50 - 150	0.0000	+/-0.50	
M4PFHpA	856884.3	3.186933	872,221.00	3.186933	98	50 - 150	0.0000	+/-0.50	
M8PFOA	770368.5	3.469917	754,054.00	3.469917	102	50 - 150	0.0000	+/-0.50	
M8PFOS	105649.8	3.660133	125,235.00	3.660133	84	50 - 150	0.0000	+/-0.50	
M9PFNA	612347.1	3.661183	634,069.00	3.661183	97	50 - 150	0.0000	+/-0.50	
MPFDoA	1014217	4.08865	983,581.00	4.08865	103	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	200843.3	3.9615	188,700.00	3.9615	106	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	233108.7	3.88175	272,416.00	3.88175	86	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B289938-BS1)			Lab File ID: B289938-BS1.d			Analyzed: 09/17/21 11:54			
M8FOSA	301793.5	4.01255	369,591.00	4.01255	82	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	143820.6	2.51325	158,816.00	2.505033	91	50 - 150	0.0082	+/-0.50	
M2PFTA	1187806	4.32155	1,328,511.00	4.32155	89	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	85227.05	3.810767	92,666.00	3.810767	92	50 - 150	0.0000	+/-0.50	
MPFBA	520104	1.0917	585,136.00	1.0917	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	182087.3	2.847483	198,070.00	2.847483	92	50 - 150	0.0000	+/-0.50	
M6PFDA	633355.8	3.811283	707,695.00	3.811283	89	50 - 150	0.0000	+/-0.50	
M3PFBS	144776.9	1.911533	165,269.00	1.911533	88	50 - 150	0.0000	+/-0.50	
M7PFUnA	883287.4	3.954033	942,111.00	3.954033	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	69216.52	3.453267	79,940.00	3.453267	87	50 - 150	0.0000	+/-0.50	
M5PFPeA	517160.1	1.741117	583,615.00	1.741117	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	796757.7	2.596983	912,809.00	2.588767	87	50 - 150	0.0082	+/-0.50	
M3PFHxS	100206.2	3.226417	118,966.00	3.226417	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	757900.6	3.195017	872,221.00	3.186933	87	50 - 150	0.0081	+/-0.50	
M8PFOA	696942	3.469917	754,054.00	3.469917	92	50 - 150	0.0000	+/-0.50	
M8PFOS	109105.3	3.660133	125,235.00	3.660133	87	50 - 150	0.0000	+/-0.50	
M9PFNA	573617.5	3.6532	634,069.00	3.661183	90	50 - 150	-0.0080	+/-0.50	
MPFDoA	895083.6	4.08865	983,581.00	4.08865	91	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	177687.6	3.9615	188,700.00	3.9615	94	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244807.3	3.88175	272,416.00	3.88175	90	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B289938-BSD1) Lab File ID: B289938-BSD1.d Analyzed: 09/17/21 12:01									
M8FOSA	300678.1	4.01255	369,591.00	4.01255	81	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	140517.7	2.51325	158,816.00	2.505033	88	50 - 150	0.0082	+/-0.50	
M2PFTA	1146976	4.32155	1,328,511.00	4.32155	86	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	85322.66	3.810767	92,666.00	3.810767	92	50 - 150	0.0000	+/-0.50	
MPFBA	526236.3	1.0917	585,136.00	1.0917	90	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	185853.3	2.847483	198,070.00	2.847483	94	50 - 150	0.0000	+/-0.50	
M6PFDA	589551.6	3.811283	707,695.00	3.811283	83	50 - 150	0.0000	+/-0.50	
M3PFBS	144897.4	1.911533	165,269.00	1.911533	88	50 - 150	0.0000	+/-0.50	
M7PFUnA	843116.2	3.954033	942,111.00	3.954033	89	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	74148.76	3.453267	79,940.00	3.453267	93	50 - 150	0.0000	+/-0.50	
M5PFPeA	520775.8	1.741117	583,615.00	1.741117	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	797373.1	2.596983	912,809.00	2.588767	87	50 - 150	0.0082	+/-0.50	
M3PFHxS	103045.6	3.226417	118,966.00	3.226417	87	50 - 150	0.0000	+/-0.50	
M4PFHpA	773294.8	3.186933	872,221.00	3.186933	89	50 - 150	0.0000	+/-0.50	
M8PFOA	667804.4	3.469917	754,054.00	3.469917	89	50 - 150	0.0000	+/-0.50	
M8PFOS	97716.94	3.660133	125,235.00	3.660133	78	50 - 150	0.0000	+/-0.50	
M9PFNA	569593	3.6532	634,069.00	3.661183	90	50 - 150	-0.0080	+/-0.50	
MPFDoA	909621.3	4.08865	983,581.00	4.08865	92	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	194390.5	3.9615	188,700.00	3.9615	103	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	214739.7	3.88175	272,416.00	3.88175	79	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B290193-BLK1) Lab File ID: B290193-BLK1.d Analyzed: 09/17/21 19:48									
M8FOSA	345722.7	4.00455	369,591.00	4.00455	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	153518.1	2.496817	158,816.00	2.496817	97	50 - 150	0.0000	+/-0.50	
M2PFTA	1257450	4.32155	1,328,511.00	4.32155	95	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	121288.2	3.8028	92,666.00	3.810767	131	50 - 150	-0.0080	+/-0.50	
MPFBA	699285.9	1.0917	585,136.00	1.0917	120	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	227540.6	2.8393	198,070.00	2.8393	115	50 - 150	0.0000	+/-0.50	
M6PFDA	855219.2	3.803317	707,695.00	3.803317	121	50 - 150	0.0000	+/-0.50	
M3PFBS	167270.5	1.911533	165,269.00	1.90325	101	50 - 150	0.0083	+/-0.50	
M7PFUnA	1073297	3.946033	942,111.00	3.946033	114	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	83873.37	3.453267	79,940.00	3.453267	105	50 - 150	0.0000	+/-0.50	
M5PFPeA	651597.8	1.731383	583,615.00	1.731383	112	50 - 150	0.0000	+/-0.50	
M5PFHxA	973016.9	2.58055	912,809.00	2.588767	107	50 - 150	-0.0082	+/-0.50	
M3PFHxS	113064.6	3.218333	118,966.00	3.218333	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	959413.6	3.186933	872,221.00	3.186933	110	50 - 150	0.0000	+/-0.50	
M8PFOA	871315.8	3.461933	754,054.00	3.469917	116	50 - 150	-0.0080	+/-0.50	
M8PFOS	126071.3	3.65215	125,235.00	3.65215	101	50 - 150	0.0000	+/-0.50	
M9PFNA	720073.1	3.653183	634,069.00	3.6532	114	50 - 150	0.0000	+/-0.50	
MPFDoA	1036180	4.08065	983,581.00	4.08065	105	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	245184.2	3.9535	188,700.00	3.9535	130	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	305551.9	3.88175	272,416.00	3.88175	112	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B290193-BS1)		Lab File ID: B290193-BS1.d				Analyzed: 09/17/21 19:33			
M8FOSA	288324.7	4.00455	369,591.00	4.00455	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	146211.1	2.505033	158,816.00	2.496817	92	50 - 150	0.0082	+/-0.50	
M2PFTA	1128587	4.32155	1,328,511.00	4.32155	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	104509.1	3.810767	92,666.00	3.810767	113	50 - 150	0.0000	+/-0.50	
MPFBA	665400.7	1.0917	585,136.00	1.0917	114	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	273163.2	2.8393	198,070.00	2.8393	138	50 - 150	0.0000	+/-0.50	
M6PFDA	826576.9	3.803317	707,695.00	3.803317	117	50 - 150	0.0000	+/-0.50	
M3PFBS	156984.5	1.911533	165,269.00	1.90325	95	50 - 150	0.0083	+/-0.50	
M7PFUnA	1066784	3.946033	942,111.00	3.946033	113	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	77403.84	3.453267	79,940.00	3.453267	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	611097.9	1.741117	583,615.00	1.731383	105	50 - 150	0.0097	+/-0.50	
M5PFHxA	939046.4	2.588767	912,809.00	2.588767	103	50 - 150	0.0000	+/-0.50	
M3PFHxS	109178.4	3.218333	118,966.00	3.218333	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	892269.8	3.186933	872,221.00	3.186933	102	50 - 150	0.0000	+/-0.50	
M8PFOA	785627.6	3.469917	754,054.00	3.469917	104	50 - 150	0.0000	+/-0.50	
M8PFOS	124172.2	3.65215	125,235.00	3.65215	99	50 - 150	0.0000	+/-0.50	
M9PFNA	671046.3	3.653183	634,069.00	3.6532	106	50 - 150	0.0000	+/-0.50	
MPFDoA	947818.8	4.08065	983,581.00	4.08065	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	190612.5	3.9535	188,700.00	3.9535	101	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	273729.5	3.88175	272,416.00	3.88175	100	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B290193-BSD1) Lab File ID: B290193-BSD1.d Analyzed: 09/17/21 19:41									
M8FOSA	325373.4	4.00455	369,591.00	4.00455	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	148906.6	2.496817	158,816.00	2.496817	94	50 - 150	0.0000	+/-0.50	
M2PFTA	1283329	4.32155	1,328,511.00	4.32155	97	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	112040.1	3.810767	92,666.00	3.810767	121	50 - 150	0.0000	+/-0.50	
MPFBA	658822.6	1.0917	585,136.00	1.0917	113	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	230800.8	2.8393	198,070.00	2.8393	117	50 - 150	0.0000	+/-0.50	
M6PFDA	763013.8	3.803317	707,695.00	3.803317	108	50 - 150	0.0000	+/-0.50	
M3PFBS	149789.6	1.911533	165,269.00	1.90325	91	50 - 150	0.0083	+/-0.50	
M7PFUnA	980950.6	3.946033	942,111.00	3.946033	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78224.07	3.453267	79,940.00	3.453267	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	613204.1	1.731383	583,615.00	1.731383	105	50 - 150	0.0000	+/-0.50	
M5PFHxA	932257.4	2.588767	912,809.00	2.588767	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	103605	3.218333	118,966.00	3.218333	87	50 - 150	0.0000	+/-0.50	
M4PFHpA	875828.1	3.186933	872,221.00	3.186933	100	50 - 150	0.0000	+/-0.50	
M8PFOA	850063	3.461933	754,054.00	3.469917	113	50 - 150	-0.0080	+/-0.50	
M8PFOS	121188.9	3.65215	125,235.00	3.65215	97	50 - 150	0.0000	+/-0.50	
M9PFNA	640080.3	3.653183	634,069.00	3.6532	101	50 - 150	0.0000	+/-0.50	
MPFDoA	1079706	4.08065	983,581.00	4.08065	110	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	224172.5	3.9535	188,700.00	3.9535	119	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	254087.3	3.88175	272,416.00	3.88175	93	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B290250-BLK1)			Lab File ID: B290250-BLK1.d			Analyzed: 09/20/21 15:01			
M8FOSA	246270	4.00455	218,614.00	4.01255	113	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	121954	2.57895	103,259.00	2.57895	118	50 - 150	0.0000	+/-0.50	
M2PFTA	1135108	4.362167	915,422.00	4.3703	124	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	94424.71	3.842967	71,083.00	3.842967	133	50 - 150	0.0000	+/-0.50	
MPFBA	473479.2	1.116633	362,574.00	1.116633	131	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	139615.6	2.904767	128,250.00	2.904767	109	50 - 150	0.0000	+/-0.50	
M6PFDA	602965.4	3.843467	458,138.00	3.843467	132	50 - 150	0.0000	+/-0.50	
M3PFBS	120793.4	1.969733	94,406.00	1.969733	128	50 - 150	0.0000	+/-0.50	
M7PFUnA	853585.2	3.986	656,922.00	3.986	130	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	68212.74	3.48535	48,940.00	3.493333	139	50 - 150	-0.0080	+/-0.50	
M5PFPeA	479382.5	1.791367	370,457.00	1.791367	129	50 - 150	0.0000	+/-0.50	
M5PFHxA	706016.4	2.663233	551,718.00	2.663233	128	50 - 150	0.0000	+/-0.50	
M3PFHxS	80174.94	3.25875	65,016.00	3.25875	123	50 - 150	0.0000	+/-0.50	
M4PFHpA	686232.4	3.227617	534,996.00	3.227617	128	50 - 150	0.0000	+/-0.50	
M8PFOA	608650	3.50185	486,421.00	3.50185	125	50 - 150	0.0000	+/-0.50	
M8PFOS	89875.19	3.6841	73,070.00	3.6841	123	50 - 150	0.0000	+/-0.50	
M9PFNA	510085.8	3.685133	399,608.00	3.685133	128	50 - 150	0.0000	+/-0.50	
MPFDoA	903746.1	4.120767	673,085.00	4.1288	134	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	176412.8	3.993467	138,654.00	4.001467	127	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	223498.5	3.921883	175,092.00	3.921883	128	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B290250-BS1) Lab File ID: B290250-BS1.d Analyzed: 09/20/21 14:47									
M8FOSA	216953	4.01255	218,614.00	4.01255	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	111586.7	2.58715	103,259.00	2.57895	108	50 - 150	0.0082	+/-0.50	
M2PFTA	944136.3	4.362167	915,422.00	4.3703	103	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	86695.16	3.842967	71,083.00	3.842967	122	50 - 150	0.0000	+/-0.50	
MPFBA	432445.3	1.12495	362,574.00	1.116633	119	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	126738.8	2.91295	128,250.00	2.904767	99	50 - 150	0.0082	+/-0.50	
M6PFDA	530007.3	3.843467	458,138.00	3.843467	116	50 - 150	0.0000	+/-0.50	
M3PFBS	110656.6	1.978033	94,406.00	1.969733	117	50 - 150	0.0083	+/-0.50	
M7PFUnA	719668.4	3.986	656,922.00	3.986	110	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	58143.82	3.493333	48,940.00	3.493333	119	50 - 150	0.0000	+/-0.50	
M5PFPeA	442976.5	1.79965	370,457.00	1.791367	120	50 - 150	0.0083	+/-0.50	
M5PFHxA	655456.3	2.672333	551,718.00	2.663233	119	50 - 150	0.0091	+/-0.50	
M3PFHxS	77303.56	3.25875	65,016.00	3.25875	119	50 - 150	0.0000	+/-0.50	
M4PFHpA	648610.3	3.2357	534,996.00	3.227617	121	50 - 150	0.0081	+/-0.50	
M8PFOA	574815.5	3.50185	486,421.00	3.50185	118	50 - 150	0.0000	+/-0.50	
M8PFOS	85630.51	3.6841	73,070.00	3.6841	117	50 - 150	0.0000	+/-0.50	
M9PFNA	481267.4	3.693117	399,608.00	3.685133	120	50 - 150	0.0080	+/-0.50	
MPFDoA	718903.6	4.1288	673,085.00	4.1288	107	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	148340.4	3.993467	138,654.00	4.001467	107	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	194316.8	3.921883	175,092.00	3.921883	111	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B290250-BSD1) Lab File ID: B290250-BSD1.d Analyzed: 09/20/21 14:54									
M8FOSA	237499.6	4.01255	218,614.00	4.01255	109	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	120063.2	2.57895	103,259.00	2.57895	116	50 - 150	0.0000	+/-0.50	
M2PFTA	1115013	4.362167	915,422.00	4.3703	122	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	87125.77	3.842967	71,083.00	3.842967	123	50 - 150	0.0000	+/-0.50	
MPFBA	468107.4	1.116633	362,574.00	1.116633	129	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	183444.9	2.904767	128,250.00	2.904767	143	50 - 150	0.0000	+/-0.50	
M6PFDA	588055.9	3.843467	458,138.00	3.843467	128	50 - 150	0.0000	+/-0.50	
M3PFBS	116616.1	1.969733	94,406.00	1.969733	124	50 - 150	0.0000	+/-0.50	
M7PFUnA	792121.1	3.986	656,922.00	3.986	121	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	63092.25	3.48535	48,940.00	3.493333	129	50 - 150	-0.0080	+/-0.50	
M5PFPeA	471670.7	1.791367	370,457.00	1.791367	127	50 - 150	0.0000	+/-0.50	
M5PFHxA	707703.9	2.663233	551,718.00	2.663233	128	50 - 150	0.0000	+/-0.50	
M3PFHxS	79145.32	3.25875	65,016.00	3.25875	122	50 - 150	0.0000	+/-0.50	
M4PFHpA	671136.1	3.227617	534,996.00	3.227617	125	50 - 150	0.0000	+/-0.50	
M8PFOA	597741.1	3.50185	486,421.00	3.50185	123	50 - 150	0.0000	+/-0.50	
M8PFOS	92977.35	3.6841	73,070.00	3.6841	127	50 - 150	0.0000	+/-0.50	
M9PFNA	496842.4	3.685133	399,608.00	3.685133	124	50 - 150	0.0000	+/-0.50	
MPFDoA	809441.1	4.1288	673,085.00	4.1288	120	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	160368.1	3.993467	138,654.00	4.001467	116	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	202907.8	3.921883	175,092.00	3.921883	116	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B290484-BLK1)			Lab File ID: B290484-BLK1.d			Analyzed: 09/21/21 16:51			
M8FOSA	289249.2	4.01255	298,565.00	4.01255	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	147796.5	2.529667	152,461.00	2.537883	97	50 - 150	-0.0082	+/-0.50	
M2PFTA	1228980	4.3378	1,205,326.00	4.3378	102	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	116071.1	3.818733	111,876.00	3.827067	104	50 - 150	-0.0083	+/-0.50	
MPFBA	584318.4	1.100017	500,132.00	1.100017	117	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	229879.7	2.86385	168,519.00	2.872033	136	50 - 150	-0.0082	+/-0.50	
M6PFDA	660333.9	3.81925	618,239.00	3.81925	107	50 - 150	0.0000	+/-0.50	
M3PFBS	136968.5	1.928117	128,141.00	1.9364	107	50 - 150	-0.0083	+/-0.50	
M7PFUnA	889704.7	3.962017	896,694.00	3.970017	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	85591.25	3.469383	84,421.00	3.469383	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	562388.4	1.757717	507,610.00	1.757717	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	833699.6	2.6134	753,606.00	2.621617	111	50 - 150	-0.0082	+/-0.50	
M3PFHxS	97520.66	3.2345	96,253.00	3.242583	101	50 - 150	-0.0081	+/-0.50	
M4PFHpA	780552.9	3.203083	712,666.00	3.203083	110	50 - 150	0.0000	+/-0.50	
M8PFOA	726578.8	3.4779	632,450.00	3.4779	115	50 - 150	0.0000	+/-0.50	
M8PFOS	103354.1	3.668133	100,319.00	3.668133	103	50 - 150	0.0000	+/-0.50	
M9PFNA	601919.8	3.669167	536,176.00	3.669167	112	50 - 150	0.0000	+/-0.50	
MPFDoA	905811.6	4.096633	882,883.00	4.104633	103	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	177262.4	3.969483	184,789.00	3.977483	96	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	242070.9	3.897717	221,851.00	3.897717	109	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B290484-BS1) Lab File ID: B290484-BS1.d Analyzed: 09/21/21 16:37									
M8FOSA	281386.3	4.01255	298,565.00	4.01255	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	146616.5	2.537883	152,461.00	2.537883	96	50 - 150	0.0000	+/-0.50	
M2PFTA	1135431	4.3378	1,205,326.00	4.3378	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	100667.6	3.818733	111,876.00	3.827067	90	50 - 150	-0.0083	+/-0.50	
MPFBA	558219.1	1.108317	500,132.00	1.100017	112	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	231284.8	2.872033	168,519.00	2.872033	137	50 - 150	0.0000	+/-0.50	
M6PFDA	658893.5	3.81925	618,239.00	3.81925	107	50 - 150	0.0000	+/-0.50	
M3PFBS	138726.2	1.9364	128,141.00	1.9364	108	50 - 150	0.0000	+/-0.50	
M7PFUnA	889428.7	3.962017	896,694.00	3.970017	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	79579.59	3.4694	84,421.00	3.469383	94	50 - 150	0.0000	+/-0.50	
M5PFPeA	572924.6	1.766017	507,610.00	1.757717	113	50 - 150	0.0083	+/-0.50	
M5PFHxA	835389.5	2.621617	753,606.00	2.621617	111	50 - 150	0.0000	+/-0.50	
M3PFHxS	100131.3	3.242583	96,253.00	3.242583	104	50 - 150	0.0000	+/-0.50	
M4PFHpA	785186.9	3.203083	712,666.00	3.203083	110	50 - 150	0.0000	+/-0.50	
M8PFOA	713810.9	3.4779	632,450.00	3.4779	113	50 - 150	0.0000	+/-0.50	
M8PFOS	104435.9	3.668133	100,319.00	3.668133	104	50 - 150	0.0000	+/-0.50	
M9PFNA	572149.1	3.669167	536,176.00	3.669167	107	50 - 150	0.0000	+/-0.50	
MPFDoA	826277.9	4.104633	882,883.00	4.104633	94	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	178377.5	3.9695	184,789.00	3.977483	97	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	236585	3.897717	221,851.00	3.897717	107	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B290484-BSD1) Lab File ID: B290484-BSD1.d Analyzed: 09/21/21 16:44									
M8FOSA	304009.5	4.01255	298,565.00	4.01255	102	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	157065.8	2.529667	152,461.00	2.537883	103	50 - 150	-0.0082	+/-0.50	
M2PFTA	1306598	4.3378	1,205,326.00	4.3378	108	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	118657.4	3.818733	111,876.00	3.827067	106	50 - 150	-0.0083	+/-0.50	
MPFBA	597853.7	1.100017	500,132.00	1.100017	120	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	261035.7	2.86385	168,519.00	2.872033	155	50 - 150	-0.0082	+/-0.50	*
M6PFDA	720888.6	3.81925	618,239.00	3.81925	117	50 - 150	0.0000	+/-0.50	
M3PFBS	144415.8	1.9364	128,141.00	1.9364	113	50 - 150	0.0000	+/-0.50	
M7PFUnA	984650.3	3.962017	896,694.00	3.970017	110	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	84851.72	3.469383	84,421.00	3.469383	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	581841.9	1.757717	507,610.00	1.757717	115	50 - 150	0.0000	+/-0.50	
M5PFHxA	852231.7	2.6134	753,606.00	2.621617	113	50 - 150	-0.0082	+/-0.50	
M3PFHxS	104259.6	3.2345	96,253.00	3.242583	108	50 - 150	-0.0081	+/-0.50	
M4PFHpA	823020.1	3.203083	712,666.00	3.203083	115	50 - 150	0.0000	+/-0.50	
M8PFOA	701906.8	3.4779	632,450.00	3.4779	111	50 - 150	0.0000	+/-0.50	
M8PFOS	109516.9	3.668133	100,319.00	3.668133	109	50 - 150	0.0000	+/-0.50	
M9PFNA	601166	3.669167	536,176.00	3.669167	112	50 - 150	0.0000	+/-0.50	
MPFDoA	890216.7	4.096633	882,883.00	4.104633	101	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	200662.3	3.969483	184,789.00	3.977483	109	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	250656.3	3.897717	221,851.00	3.897717	113	50 - 150	0.0000	+/-0.50	

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

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Minor)	NH-P
9Cl-PF3ONS (F53B Major)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanefulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropetanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

http://www.pacelabs.com

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39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 2

2110272

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

Company Name: Horsley Witten Group
Address: 90 Rte 6A Unit 1, Sandwich, MA
Phone: 508-833-6600
Project Name: Hyanis
Project Location: Hyanis
Project Number:
Project Manager: Bryan Massad
Pace Quote Name/Number:
Invoice Recipient:
Sampled By: HW

Requested Turnaround Time: ☐ 7-Day ☐ 10-Day ☐ Due Date:
PFAS 10-Day (std) ☒ Rush Approval Required ☐
1-Day ☐ 3-Day ☐ 2-Day ☐ 4-Day ☐
Format: ☒ PDF ☒ EXCEL ☐ SOXHLET
CLP Like Data Pkg Required: ☐ Email To: bmassad@horsleywitten.com
Fax To #: NON SOXHLET

ANALYSIS REQUESTED

Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
1 HW-30Z	9/1	12:00	Grab	GW			Z		
2 HW-2	9/1	14:30					Z		
3 HW-3	9/1	16:00					Z		
4 HW-1K	9/2	14:30					Z		
5 OW-19(5)	9/2	18:15					Z		
6 HW-300	9/2	16:30					Z		
7 OW-19(m)	9/3	16:00					Z		
8 HW-S(m)	9/3	17:00					Z		
9 HW-S(5)	9/3	17:30					Z		
10 HW-W(m)	9/5	17:30					Z		

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

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)

1 Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
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)

Special Requirements

MA MCP Required ☒
MCP Certification Form Required ☐
CT RCP Required ☐
RCP Certification Form Required ☐
MA State DW Required ☐
PWSID #

Other: ☐ WRTA ☐ MWRA ☐ School ☐ MBTA ☐ Other ☐ Chromatogram ☐ AIHA-LAP, LLC ☐

Project Entity: ☐ Government ☐ Federal ☐ City ☐ Municipality ☐ 21 J ☐ Brownfield

Received by: (signature) Date/Time: 9/7/21 14:15
Received by: (signature) Date/Time: 9/9/21 14:35
Received by: (signature) Date/Time: 9/9/21 8:42
Received by: (signature) Date/Time: 9/16/21 20:12
Received by: (signature) Date/Time:
Received by: (signature) Date/Time:
Received by: (signature) Date/Time:

Comments: TRI preserved run isotope dilution method

Relinquished by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:

Comments: Disclaimers: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

210222



Phone: 413-525-2332

Fax: 413-525-6405

Email: info@contestlabs.com

Address: 90 Rte 6A Unit 1 Sandwich, MA
 Phone: 508-833-6600
 Project Location: Hyannis

Project Manager: Bryan Massa

Project Number: 210222

Con-Test Quote Name/Number: 210222

Invoice Recipient: 210222

Sampled By: HW

Email To: bmassa@hordywitter.com

Fax To: 210222

Format: PDF

Other: EXCEL

CLP Like Data Pkg Required: 210222

Field Filtered Lab to Filter: 210222

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39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

ANALYSIS REQUESTED

Preservation Code

Total Number Of:

VIALS

GLASS

PLASTIC 14

BACTERIA

ENCORE

Glassware in the fridge?

Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Contest is not responsible for

missing samples from prepacked

coolers

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)

PCB ONLY

Soxhlet

Non Soxhlet

Chromatogram

AIHA-LAP, LLC

Other

NELAP and AIHA-LAP, LLC Accredited

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

MA MCP

GW-1

TRI preserved, run isotope dilution

method

MA MCP

GW-1

TRI preserved, run isotope dilution

method

MA MCP

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TRI preserved, run isotope dilution

method

MA MCP

GW-1

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley Witten Group
 Received By [Signature] Date 9/7/21 Time 2042

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
 Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 5 Actual Temp - 2.8
 By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? N/A Were Samples Tampered with? N/A
 Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T
 Did COC include all Client T Analysis T Sampler Name T
 pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T
 Are there Lab to Filters? F Who was notified? _____
 Are there Rushes? F Who was notified? _____
 Are there Short Holds? F Who was notified? _____

Is there enough Volume? T
 Is there Headspace where applicable? N/A MS/MSD? F
 Proper Media/Containers Used? T Is splitting samples required? F
 Were trip blanks received? F On COC? F
 Do all samples have the proper pH? Acid N/A Base N/A

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	<u>34</u>	4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

September 28, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21I0575

Enclosed are results of analyses for samples received by the laboratory on September 13, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Matthew J Beaupre
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 9/28/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 2110575

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-R(s)	2110575-01	Ground Water		SOP-454 PFAS	
HW-J	2110575-02	Ground Water		SOP-454 PFAS	
HW-E	2110575-03	Ground Water		SOP-454 PFAS	
HW-F	2110575-04	Ground Water		SOP-454 PFAS	
HW-P(s)	2110575-05	Ground Water		SOP-454 PFAS	
HW-P(m)	2110575-06	Ground Water		SOP-454 PFAS	
HW-I(s)	2110575-07	Ground Water		SOP-454 PFAS	
HW-I(m)	2110575-08	Ground Water		SOP-454 PFAS	
HW-I(d)	2110575-09	Ground Water		SOP-454 PFAS	
OW-19(d)	2110575-10	Ground Water		SOP-454 PFAS	
HW-X(s)	2110575-11	Ground Water		SOP-454 PFAS	
HW-X(m)	2110575-12	Ground Water		SOP-454 PFAS	

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

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:****PF-17**

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:**M3HFPO-DA**

2110575-01[HW-R(s)], 2110575-02[HW-J], 2110575-03[HW-E], 2110575-04[HW-F], 2110575-05[HW-P(s)], 2110575-08[HW-I(m)], 2110575-09[HW-I(d)], 2110575-10[OW-19(d)], 2110575-11[HW-X(s)], 2110575-12[HW-X(m)]

PF-18

Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.

Analyte & Samples(s) Qualified:**M2PFTA**

2110575-05[HW-P(s)], 2110575-05RE1[HW-P(s)], 2110575-06[HW-P(m)], 2110575-06RE1[HW-P(m)]

M3HFPO-DA

2110575-06[HW-P(m)], 2110575-06RE1[HW-P(m)], 2110575-07[HW-I(s)], 2110575-07RE1[HW-I(s)]

M8FOSA

2110575-05[HW-P(s)], 2110575-05RE1[HW-P(s)]

MPFDoA

2110575-05[HW-P(s)], 2110575-05RE1[HW-P(s)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**d5-NEtFOSAA**

2110575-05[HW-P(s)], 2110575-06RE1[HW-P(m)]

M7PFUnA

2110575-06RE1[HW-P(m)]

M8FOSA

2110575-06RE1[HW-P(m)]

MPFDoA

2110575-06RE1[HW-P(m)]

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-R(s)

Sampled: 9/8/2021 12:45

Sample ID: 2110575-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	24	2.0	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoropentanoic acid (PFPeA)	100	2.0	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorohexanoic acid (PFHxA)	93	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.64	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.61	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.49	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.44	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.93	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
N-EtFOSAA	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
N-MeFOSAA	ND	2.0	0.76	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.42	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.17	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.31	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.19	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorohexanesulfonic acid (PFHxS)	4.6	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.0	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.26	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluoroheptanoic acid (PFHpA)	21	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorooctanoic acid (PFOA)	4.0	2.0	0.68	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorooctanesulfonic acid (PFOS)	5.3	2.0	0.60	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC
Perfluorononanoic acid (PFNA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 15:53	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-J

Sampled: 9/10/2021 13:30

Sample ID: 2110575-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	31	2.0	0.76	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorobutanesulfonic acid (PFBS)	1.5	2.0	0.29	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoropentanoic acid (PFPeA)	120	2.0	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorohexanoic acid (PFHxA)	63	2.0	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	24	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.50	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.45	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
N-EtFOSAA	ND	2.0	0.64	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
N-MeFOSAA	ND	2.0	0.78	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.17	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	4.4	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.87	2.0	0.19	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorohexanesulfonic acid (PFHxS)	10	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.42	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	130	2.0	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoropentanesulfonic acid (PFPeS)	2.2	2.0	0.26	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluoroheptanoic acid (PFHpA)	20	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorooctanoic acid (PFOA)	9.1	2.0	0.70	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorooctanesulfonic acid (PFOS)	80	2.0	0.61	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC
Perfluorononanoic acid (PFNA)	15	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:00	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-E

Sampled: 9/8/2021 11:45

Sample ID: 2110575-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.0	2.1	0.79	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoropentanoic acid (PFPeA)	5.2	2.1	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorohexanoic acid (PFHxA)	2.6	2.1	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.1	0.68	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
9Cl-PF3ONS (F53B Major)	ND	2.1	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	0.64	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorodecanoic acid (PFDA)	ND	2.1	0.52	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.1	0.47	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.1	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	0.99	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
N-EtFOSAA	ND	2.1	0.67	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
N-MeFOSAA	ND	2.1	0.80	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.1	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.1	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.1	0.44	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.1	0.18	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.1	0.20	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.88	2.1	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	0.44	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.1	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.1	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluoroheptanoic acid (PFHpA)	1.8	2.1	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorooctanoic acid (PFOA)	0.94	2.1	0.72	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	0.64	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC
Perfluorononanoic acid (PFNA)	ND	2.1	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:07	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-F

Sampled: 9/8/2021 12:15

Sample ID: 2110575-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	27	2.2	0.81	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	2.2	0.31	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoropentanoic acid (PFPeA)	85	2.2	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorohexanoic acid (PFHxA)	37	2.2	0.42	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.2	0.70	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
9Cl-PF3ONS (F53B Major)	ND	2.2	0.42	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.2	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.2	0.26	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.2	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorodecanoic acid (PFDA)	ND	2.2	0.53	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.2	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.2	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.2	1.0	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
N-EtFOSAA	ND	2.2	0.68	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
N-MeFOSAA	ND	2.2	0.82	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.2	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.2	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.2	0.31	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.2	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.2	0.46	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.2	0.18	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.2	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.2	0.21	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorohexanesulfonic acid (PFHxS)	ND	2.2	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.2	0.45	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.2	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4.9	2.2	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	2.2	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.2	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.2	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluoroheptanoic acid (PFHpA)	5.1	2.2	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorooctanoic acid (PFOA)	ND	2.2	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorooctanesulfonic acid (PFOS)	ND	2.2	0.65	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC
Perfluorononanoic acid (PFNA)	ND	2.2	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:14	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-P(s)

Sampled: 9/8/2021 13:15

Sample ID: 2110575-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.5	1.8	0.67	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorobutanoic acid (PFBA)	9.1	2.0	0.73	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoropentanoic acid (PFPeA)	20	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoropentanoic acid (PFPeA)	18	1.8	0.36	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorohexanoic acid (PFHxA)	12	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorohexanoic acid (PFHxA)	12	1.8	0.35	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
11Cl-PF3OUdS (F53B Minor)	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
9Cl-PF3ONS (F53B Major)	ND	1.8	0.35	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.32	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.22	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.55	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorodecanoic acid (PFDA)	ND	1.8	0.44	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorodecanoic acid (PFDA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.40	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	0.21	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.92	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.85	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
N-EtFOSAA	ND	1.8	0.57	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
N-EtFOSAA	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
N-MeFOSAA	ND	2.0	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
N-MeFOSAA	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.33	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.29	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.38	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-P(s)

Sampled: 9/8/2021 13:15

Sample ID: 2110575-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.15	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.28	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoro-1-butanedisulfonamide (FBBSA)	ND	1.8	0.17	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-1-butanedisulfonamide (FBBSA)	ND	2.0	0.19	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.56	2.0	0.33	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorohexanesulfonic acid (PFHxS)	0.56	1.8	0.31	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.38	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.31	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.4	2.0	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.91	1.8	0.33	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.23	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluoroundecanoic acid (PFUnA)	0.49	2.0	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoroundecanoic acid (PFUnA)	0.52	1.8	0.33	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.25	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoroheptanoic acid (PFHpA)	4.0	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluoroheptanoic acid (PFHpA)	4.0	1.8	0.31	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorooctanoic acid (PFOA)	1.7	2.0	0.67	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorooctanoic acid (PFOA)	1.5	1.8	0.62	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.54	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH
Perfluorononanoic acid (PFNA)	1.3	2.0	0.34	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:22	JFC
Perfluorononanoic acid (PFNA)	1.3	1.8	0.31	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:44	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-P(m)

Sampled: 9/8/2021 13:30

Sample ID: 2110575-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	23	2.0	0.73	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorobutanoic acid (PFBA)	23	1.9	0.72	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorobutanesulfonic acid (PFBS)	0.42	2.0	0.28	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorobutanesulfonic acid (PFBS)	0.38	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoropentanoic acid (PFPeA)	59	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoropentanoic acid (PFPeA)	59	1.9	0.38	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorohexanoic acid (PFHxA)	31	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorohexanoic acid (PFHxA)	32	1.9	0.37	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
9Cl-PF3ONS (F53B Major)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.38	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorodecanoic acid (PFDA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.48	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.43	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.92	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.91	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
N-EtFOSAA	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
N-EtFOSAA	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
N-MeFOSAA	ND	2.0	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
N-MeFOSAA	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-P(m)

Sampled: 9/8/2021 13:30

Sample ID: 2110575-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoro-1-butanedisulfonamide (FBBSA)	ND	2.0	0.19	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoro-1-butanedisulfonamide (FBBSA)	ND	1.9	0.19	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorohexanesulfonic acid (PFHxS)	1.3	2.0	0.33	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorohexanesulfonic acid (PFHxS)	1.3	1.9	0.33	ng/L	1	J	SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.25	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluoroheptanoic acid (PFHpA)	16	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluoroheptanoic acid (PFHpA)	16	1.9	0.34	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorooctanoic acid (PFOA)	10	2.0	0.67	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorooctanoic acid (PFOA)	11	1.9	0.66	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorooctanesulfonic acid (PFOS)	3.0	2.0	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorooctanesulfonic acid (PFOS)	3.0	1.9	0.58	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH
Perfluorononanoic acid (PFNA)	9.9	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:29	JFC
Perfluorononanoic acid (PFNA)	8.3	1.9	0.34	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:51	BLH

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-1(s)

Sampled: 9/8/2021 10:30

Sample ID: 2110575-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	47	1.9	0.72	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorobutanesulfonic acid (PFBS)	2.0	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoropentanoic acid (PFPeA)	190	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorohexanoic acid (PFHxA)	130	1.9	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	47	5.6	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:58	BLH
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.92	1.9	0.59	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.47	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoroheptanesulfonic acid (PFHpS)	3.2	1.9	0.91	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
N-EtFOSAA	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
N-MeFOSAA	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	0.62	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	3.5	1.9	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoro-1-butanesulfonamide (FBSA)	3.7	1.9	0.18	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorohexanesulfonic acid (PFHxS)	36	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2100	47	8.6	ng/L	1		SOP-454 PFAS	9/24/21	9/27/21 14:58	BLH
Perfluoropentanesulfonic acid (PFPeS)	3.1	1.9	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluoroheptanoic acid (PFHpA)	97	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorooctanoic acid (PFOA)	63	1.9	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorooctanesulfonic acid (PFOS)	20	1.9	0.58	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC
Perfluorononanoic acid (PFNA)	33	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:36	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-1(m)

Sampled: 9/8/2021 10:55

Sample ID: 2110575-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.90	2.0	0.76	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorobutanesulfonic acid (PFBS)	0.36	2.0	0.29	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoropentanoic acid (PFPeA)	1.7	2.0	0.40	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorohexanoic acid (PFHxA)	2.0	2.0	0.39	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.50	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.45	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.96	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
N-EtFOSAA	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
N-MeFOSAA	ND	2.0	0.78	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.17	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.20	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorohexanesulfonic acid (PFHxS)	7.8	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoropentanesulfonic acid (PFPeS)	0.32	2.0	0.26	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluoroheptanoic acid (PFHpA)	1.4	2.0	0.35	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorooctanoic acid (PFOA)	1.6	2.0	0.70	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorooctanesulfonic acid (PFOS)	16	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC
Perfluorononanoic acid (PFNA)	0.46	2.0	0.35	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 16:58	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-1(d)

Sampled: 9/8/2021 11:10

Sample ID: 2110575-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	9.2	2.0	0.73	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorobutanesulfonic acid (PFBS)	1.6	2.0	0.28	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoropentanoic acid (PFPeA)	28	2.0	0.39	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorohexanoic acid (PFHxA)	21	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.0	0.63	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
9Cl-PF3ONS (F53B Major)	ND	2.0	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.60	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorodecanoic acid (PFDA)	ND	2.0	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoroheptanesulfonic acid (PFHpS)	0.99	2.0	0.92	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
N-EtFOSAA	ND	2.0	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
N-MeFOSAA	ND	2.0	0.75	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.0	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	0.19	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorohexanesulfonic acid (PFHxS)	50	2.0	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.54	2.0	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoropentanesulfonic acid (PFPeS)	2.1	2.0	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluoroheptanoic acid (PFHpA)	8.3	2.0	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorooctanoic acid (PFOA)	5.3	2.0	0.67	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorooctanesulfonic acid (PFOS)	39	2.0	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC
Perfluorononanoic acid (PFNA)	0.84	2.0	0.34	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:05	JFC

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Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: OW-19(d)

Sampled: 9/11/2021 17:30

Sample ID: 2110575-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	24	1.9	0.72	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorobutanesulfonic acid (PFBS)	1.5	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoropentanoic acid (PFPeA)	100	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorohexanoic acid (PFHxA)	75	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorodecanoic acid (PFDA)	ND	1.9	0.48	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoroheptanesulfonic acid (PFHpS)	0.98	1.9	0.91	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
N-EtFOSAA	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
N-MeFOSAA	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.41	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.63	1.9	0.19	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorohexanesulfonic acid (PFHxS)	28	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.9	1.9	0.25	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluoroheptanoic acid (PFHpA)	22	1.9	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorooctanoic acid (PFOA)	7.0	1.9	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorooctanesulfonic acid (PFOS)	53	1.9	0.59	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC
Perfluorononanoic acid (PFNA)	0.88	1.9	0.34	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:12	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-X(s)

Sampled: 9/10/2021 10:55

Sample ID: 2110575-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.9	2.1	0.77	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorobutanesulfonic acid (PFBS)	2.3	2.1	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoropentanoic acid (PFPeA)	17	2.1	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorohexanoic acid (PFHxA)	14	2.1	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
11Cl-PF3OUdS (F53B Minor)	ND	2.1	0.66	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
9Cl-PF3ONS (F53B Major)	ND	2.1	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	0.36	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	0.63	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorodecanoic acid (PFDA)	ND	2.1	0.50	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorododecanoic acid (PFDoA)	ND	2.1	0.45	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	0.24	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoroheptanesulfonic acid (PFHpS)	1.7	2.1	0.97	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
N-EtFOSAA	ND	2.1	0.65	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
N-MeFOSAA	ND	2.1	0.78	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorotetradecanoic acid (PFTA)	ND	2.1	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorotridecanoic acid (PFTTrDA)	ND	2.1	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	0.29	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	0.34	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorooctanesulfonamide (FOSA)	ND	2.1	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorononanesulfonic acid (PFNS)	ND	2.1	0.17	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	1.5	2.1	0.32	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.42	2.1	0.20	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorohexanesulfonic acid (PFHxS)	47	2.1	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	0.43	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.0	2.1	0.38	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoropentanesulfonic acid (PFPeS)	1.8	2.1	0.27	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoroundecanoic acid (PFUnA)	ND	2.1	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	0.28	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluoroheptanoic acid (PFHpA)	6.1	2.1	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorooctanoic acid (PFOA)	13	2.1	0.70	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorooctanesulfonic acid (PFOS)	68	2.1	0.62	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC
Perfluorononanoic acid (PFNA)	0.49	2.1	0.36	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:19	JFC

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110575

Date Received: 9/13/2021

Field Sample #: HW-X(m)

Sampled: 9/10/2021 11:15

Sample ID: 2110575-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	7.1	1.9	0.71	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorobutanesulfonic acid (PFBS)	1.4	1.9	0.27	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoropentanoic acid (PFPeA)	22	1.9	0.38	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorohexanoic acid (PFHxA)	17	1.9	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
11Cl-PF3OUdS (F53B Minor)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
9Cl-PF3ONS (F53B Major)	ND	1.9	0.37	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.23	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.58	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorodecanoic acid (PFDA)	4.2	1.9	0.47	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.42	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	0.22	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.90	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
N-EtFOSAA	ND	1.9	0.60	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
N-MeFOSAA	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.27	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorodecanesulfonic acid (PFDS)	0.44	1.9	0.31	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.16	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.30	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoro-1-butanefulfonamide (FBFA)	0.41	1.9	0.18	ng/L	1	J	SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorohexanesulfonic acid (PFHxS)	2.1	1.9	0.32	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.40	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.25	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.35	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.26	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluoroheptanoic acid (PFHpA)	3.4	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorooctanoic acid (PFOA)	6.2	1.9	0.65	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorooctanesulfonic acid (PFOS)	34	1.9	0.58	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC
Perfluorononanoic acid (PFNA)	2.0	1.9	0.33	ng/L	1		SOP-454 PFAS	9/16/21	9/23/21 17:26	JFC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data****Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0575-01 [HW-R(s)]	B290193	251	1.00	09/16/21
21I0575-02 [HW-J]	B290193	245	1.00	09/16/21
21I0575-03 [HW-E]	B290193	237	1.00	09/16/21
21I0575-04 [HW-F]	B290193	231	1.00	09/16/21
21I0575-05 [HW-P(s)]	B290193	256	1.00	09/16/21
21I0575-06 [HW-P(m)]	B290193	256	1.00	09/16/21
21I0575-07 [HW-I(s)]	B290193	259	1.00	09/16/21
21I0575-08 [HW-I(m)]	B290193	245	1.00	09/16/21
21I0575-09 [HW-I(d)]	B290193	255	1.00	09/16/21
21I0575-10 [OW-19(d)]	B290193	257	1.00	09/16/21
21I0575-11 [HW-X(s)]	B290193	243	1.00	09/16/21
21I0575-12 [HW-X(m)]	B290193	261	1.00	09/16/21

Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0575-05RE1 [HW-P(s)]	B290910	277	1.00	09/24/21
21I0575-06RE1 [HW-P(m)]	B290910	257	1.00	09/24/21
21I0575-07RE1 [HW-I(s)]	B290910	10.6	1.00	09/24/21

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290193 - SOP 454-PFAAS
Blank (B290193-BLK1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	ND	2.1	ng/L
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	ng/L
Perfluoropentanoic acid (PFPeA)	ND	2.1	ng/L
Perfluorohexanoic acid (PFHxA)	ND	2.1	ng/L
11Cl-PF3OUdS (F53B Minor)	ND	2.1	ng/L
9Cl-PF3ONS (F53B Major)	ND	2.1	ng/L
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	ng/L
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	ng/L
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	ng/L
Perfluorodecanoic acid (PFDA)	ND	2.1	ng/L
Perfluorododecanoic acid (PFDoA)	ND	2.1	ng/L
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.1	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	ng/L
N-EtFOSAA	ND	2.1	ng/L
N-MeFOSAA	ND	2.1	ng/L
Perfluorotetradecanoic acid (PFTA)	ND	2.1	ng/L
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	ng/L
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	ng/L
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	ng/L
Perfluorooctanesulfonamide (FOSA)	ND	2.1	ng/L
Perfluorononanesulfonic acid (PFNS)	ND	2.1	ng/L
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	ng/L
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.1	ng/L
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	ng/L
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	ng/L
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	ng/L
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	ng/L
Perfluoropentanesulfonic acid (PFPeS)	ND	2.1	ng/L
Perfluoroundecanoic acid (PFUnA)	ND	2.1	ng/L
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	ng/L
Perfluoroheptanoic acid (PFHpA)	ND	2.1	ng/L
Perfluorooctanoic acid (PFOA)	ND	2.1	ng/L
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	ng/L
Perfluorononanoic acid (PFNA)	ND	2.1	ng/L

LCS (B290193-BS1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	9.12	2.0	ng/L	9.88	92.3	73-129
Perfluorobutanesulfonic acid (PFBS)	8.08	2.0	ng/L	8.74	92.4	72-130
Perfluoropentanoic acid (PFPeA)	8.84	2.0	ng/L	9.88	89.5	72-129
Perfluorohexanoic acid (PFHxA)	8.73	2.0	ng/L	9.88	88.4	72-129
11Cl-PF3OUdS (F53B Minor)	8.28	2.0	ng/L	9.31	88.9	50-150
9Cl-PF3ONS (F53B Major)	8.28	2.0	ng/L	9.21	89.9	50-150
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.15	2.0	ng/L	9.31	87.5	50-150
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.44	2.0	ng/L	9.88	75.3	50-150
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.3	2.0	ng/L	9.49	109	67-138
Perfluorodecanoic acid (PFDA)	8.05	2.0	ng/L	9.88	81.5	71-129
Perfluorododecanoic acid (PFDoA)	9.34	2.0	ng/L	9.88	94.5	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	10.1	2.0	ng/L	8.79	115	50-150

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290193 - SOP 454-PFAAS
LCS (B290193-BS1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluoroheptanesulfonic acid (PFHpS)	8.62	2.0	ng/L	9.44		91.4	69-134			
N-EtFOSAA	11.2	2.0	ng/L	9.88		113	61-135			
N-MeFOSAA	10.4	2.0	ng/L	9.88		105	65-136			
Perfluorotetradecanoic acid (PFTA)	8.09	2.0	ng/L	9.88		81.9	71-132			
Perfluorotridecanoic acid (PFTTrDA)	9.73	2.0	ng/L	9.88		98.4	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.76	2.0	ng/L	9.24		94.8	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.71	2.0	ng/L	9.53		91.4	53-142			
Perfluorooctanesulfonamide (FOSA)	9.40	2.0	ng/L	9.88		95.1	67-137			
Perfluorononanesulfonic acid (PFNS)	9.74	2.0	ng/L	9.49		103	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.23	2.0	ng/L	9.88		83.3	50-150			
Perfluoro-1-butanefulfonamide (FBSA)	9.48	2.0	ng/L	9.88		95.9	50-150			
Perfluorohexanesulfonic acid (PFHxS)	8.34	2.0	ng/L	8.99		92.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	2.0	ng/L	9.88		106	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	11.1	2.0	ng/L	9.88		112	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.69	2.0	ng/L	9.39		92.6	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.18	2.0	ng/L	9.29		88.1	71-127			
Perfluoroundecanoic acid (PFUnA)	7.60	2.0	ng/L	9.88		76.9	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.32	2.0	ng/L	9.88		94.4	50-150			
Perfluoroheptanoic acid (PFHpA)	9.23	2.0	ng/L	9.88		93.4	72-130			
Perfluorooctanoic acid (PFOA)	8.53	2.0	ng/L	9.88		86.3	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.35	2.0	ng/L	9.14		91.4	65-140			
Perfluorononanoic acid (PFNA)	9.09	2.0	ng/L	9.88		92.0	69-130			

LCS Dup (B290193-BSD1)

Prepared: 09/16/21 Analyzed: 09/17/21

Perfluorobutanoic acid (PFBA)	8.44	2.0	ng/L	9.87		85.5	73-129	7.72	30	
Perfluorobutanesulfonic acid (PFBS)	7.38	2.0	ng/L	8.73		84.5	72-130	9.10	30	
Perfluoropentanoic acid (PFPeA)	8.18	2.0	ng/L	9.87		82.9	72-129	7.71	30	
Perfluorohexanoic acid (PFHxA)	8.11	2.0	ng/L	9.87		82.2	72-129	7.40	30	
11Cl-PF3OUdS (F53B Minor)	7.84	2.0	ng/L	9.30		84.4	50-150	5.39	30	
9Cl-PF3ONS (F53B Major)	7.37	2.0	ng/L	9.20		80.2	50-150	11.6	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	7.75	2.0	ng/L	9.30		83.4	50-150	4.95	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.40	2.0	ng/L	9.87		85.2	50-150	12.1	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.27	2.0	ng/L	9.47		97.9	67-138	10.5	30	
Perfluorodecanoic acid (PFDA)	8.71	2.0	ng/L	9.87		88.2	71-129	7.84	30	
Perfluorododecanoic acid (PFDoA)	7.65	2.0	ng/L	9.87		77.6	72-134	19.8	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	9.53	2.0	ng/L	8.78		108	50-150	5.66	30	
Perfluoroheptanesulfonic acid (PFHpS)	7.86	2.0	ng/L	9.42		83.4	69-134	9.26	30	
N-EtFOSAA	9.11	2.0	ng/L	9.87		92.3	61-135	20.5	30	
N-MeFOSAA	10.8	2.0	ng/L	9.87		109	65-136	3.33	30	
Perfluorotetradecanoic acid (PFTA)	7.80	2.0	ng/L	9.87		79.0	71-132	3.64	30	
Perfluorotridecanoic acid (PFTTrDA)	8.28	2.0	ng/L	9.87		83.9	65-144	16.1	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.98	2.0	ng/L	9.23		86.5	63-143	9.32	30	
Perfluorodecanesulfonic acid (PFDS)	8.60	2.0	ng/L	9.52		90.3	53-142	1.29	30	
Perfluorooctanesulfonamide (FOSA)	8.10	2.0	ng/L	9.87		82.0	67-137	14.9	30	
Perfluorononanesulfonic acid (PFNS)	8.32	2.0	ng/L	9.47		87.9	69-127	15.7	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	7.13	2.0	ng/L	9.87		72.2	50-150	14.4	30	
Perfluoro-1-butanefulfonamide (FBSA)	8.85	2.0	ng/L	9.87		89.7	50-150	6.87	30	
Perfluorohexanesulfonic acid (PFHxS)	7.40	2.0	ng/L	8.98		82.4	68-131	12.0	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.75	2.0	ng/L	9.87		98.8	50-150	6.83	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.2	2.0	ng/L	9.87		103	50-150	8.13	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290193 - SOP 454-PFAAS
LCS Dup (B290193-BSD1)

Prepared: 09/16/21 Analyzed: 09/17/21

6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.87	2.0	ng/L	9.37		94.6	64-140	2.05	30	
Perfluoropetanesulfonic acid (PFPeS)	7.62	2.0	ng/L	9.28		82.2	71-127	7.07	30	
Perfluoroundecanoic acid (PFUnA)	8.49	2.0	ng/L	9.87		86.0	69-133	11.0	30	
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	8.75	2.0	ng/L	9.87		88.7	50-150	6.35	30	
Perfluoroheptanoic acid (PFHpA)	8.69	2.0	ng/L	9.87		88.0	72-130	6.09	30	
Perfluorooctanoic acid (PFOA)	7.14	2.0	ng/L	9.87		72.4	71-133	17.7	30	
Perfluorooctanesulfonic acid (PFOS)	7.89	2.0	ng/L	9.13		86.5	65-140	5.66	30	
Perfluorononanoic acid (PFNA)	9.27	2.0	ng/L	9.87		93.9	69-130	1.98	30	

Batch B290910 - SOP 454-PFAAS
Blank (B290910-BLK1)

Prepared: 09/24/21 Analyzed: 09/27/21

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Minor)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Major)	ND	2.0	ng/L							
4,8-dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA	ND	2.0	ng/L							
N-MeFOSAA	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanefulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropetanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B290910 - SOP 454-PFAAS
LCS (B290910-BS1)

Prepared: 09/24/21 Analyzed: 09/27/21

Perfluorobutanoic acid (PFBA)	9.12	2.0	ng/L	9.86		92.5	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.86	2.0	ng/L	8.73		90.0	72-130			
Perfluoropentanoic acid (PFPeA)	8.31	2.0	ng/L	9.86		84.3	72-129			
Perfluorohexanoic acid (PFHxA)	8.66	2.0	ng/L	9.86		87.9	72-129			
11Cl-PF3OUdS (F53B Minor)	7.99	2.0	ng/L	9.29		86.0	50-150			
9Cl-PF3ONS (F53B Major)	8.65	2.0	ng/L	9.19		94.2	50-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.10	2.0	ng/L	9.29		87.2	50-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.06	2.0	ng/L	9.86		81.8	50-150			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.33	2.0	ng/L	9.47		88.0	67-138			
Perfluorodecanoic acid (PFDA)	7.62	2.0	ng/L	9.86		77.2	71-129			
Perfluorododecanoic acid (PFDoA)	7.60	2.0	ng/L	9.86		77.1	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.57	2.0	ng/L	8.78		109	50-150			
Perfluoroheptanesulfonic acid (PFHpS)	9.33	2.0	ng/L	9.42		99.1	69-134			
N-EtFOSAA	9.47	2.0	ng/L	9.86		96.0	61-135			
N-MeFOSAA	10.8	2.0	ng/L	9.86		109	65-136			
Perfluorotetradecanoic acid (PFTA)	8.05	2.0	ng/L	9.86		81.6	71-132			
Perfluorotridecanoic acid (PFTrDA)	8.22	2.0	ng/L	9.86		83.4	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.89	2.0	ng/L	9.22		96.4	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.60	2.0	ng/L	9.52		79.8	53-142			
Perfluorooctanesulfonamide (FOSA)	8.76	2.0	ng/L	9.86		88.8	67-137			
Perfluorononanesulfonic acid (PFNS)	8.26	2.0	ng/L	9.47		87.3	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.78	2.0	ng/L	9.86		89.0	50-150			
Perfluoro-1-butanessulfonamide (FBSA)	10.2	2.0	ng/L	9.86		103	50-150			
Perfluorohexanesulfonic acid (PFHxS)	7.78	2.0	ng/L	8.97		86.7	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.8	2.0	ng/L	9.86		110	50-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.6	2.0	ng/L	9.86		108	50-150			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.57	2.0	ng/L	9.37		91.5	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.80	2.0	ng/L	9.27		84.1	71-127			
Perfluoroundecanoic acid (PFUnA)	8.32	2.0	ng/L	9.86		84.4	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.66	2.0	ng/L	9.86		97.9	50-150			
Perfluoroheptanoic acid (PFHpA)	9.51	2.0	ng/L	9.86		96.4	72-130			
Perfluorooctanoic acid (PFOA)	8.57	2.0	ng/L	9.86		86.9	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.80	2.0	ng/L	9.12		96.5	65-140			
Perfluorononanoic acid (PFNA)	8.34	2.0	ng/L	9.86		84.5	69-130			

LCS Dup (B290910-BS1)

Prepared: 09/24/21 Analyzed: 09/27/21

Perfluorobutanoic acid (PFBA)	8.89	1.9	ng/L	9.72		91.6	73-129	2.51	30	
Perfluorobutanesulfonic acid (PFBS)	7.73	1.9	ng/L	8.60		89.9	72-130	1.62	30	
Perfluoropentanoic acid (PFPeA)	8.30	1.9	ng/L	9.72		85.5	72-129	0.116	30	
Perfluorohexanoic acid (PFHxA)	8.51	1.9	ng/L	9.72		87.6	72-129	1.74	30	
11Cl-PF3OUdS (F53B Minor)	7.31	1.9	ng/L	9.15		79.9	50-150	8.89	30	
9Cl-PF3ONS (F53B Major)	7.55	1.9	ng/L	9.05		83.4	50-150	13.6	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	8.02	1.9	ng/L	9.15		87.6	50-150	1.03	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.22	1.9	ng/L	9.72		74.3	50-150	11.0	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.56	1.9	ng/L	9.33		91.8	67-138	2.79	30	
Perfluorodecanoic acid (PFDA)	8.33	1.9	ng/L	9.72		85.8	71-129	8.95	30	
Perfluorododecanoic acid (PFDoA)	8.41	1.9	ng/L	9.72		86.6	72-134	10.1	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.69	1.9	ng/L	8.65		112	50-150	1.23	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B290910 - SOP 454-PFAAS										
LCS Dup (B290910-BSD1)										
Prepared: 09/24/21 Analyzed: 09/27/21										
Perfluoroheptanesulfonic acid (PFHpS)	8.61	1.9	ng/L	9.28		92.8	69-134	8.12	30	
N-EtFOSAA	10.1	1.9	ng/L	9.72		104	61-135	6.00	30	
N-MeFOSAA	10.6	1.9	ng/L	9.72		110	65-136	1.37	30	
Perfluorotetradecanoic acid (PFTA)	7.97	1.9	ng/L	9.72		82.0	71-132	1.02	30	
Perfluorotridecanoic acid (PFTTrDA)	9.20	1.9	ng/L	9.72		94.7	65-144	11.2	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.83	1.9	ng/L	9.08		97.3	63-143	0.579	30	
Perfluorodecanesulfonic acid (PFDS)	7.06	1.9	ng/L	9.38		75.4	53-142	7.25	30	
Perfluorooctanesulfonamide (FOSA)	8.73	1.9	ng/L	9.72		89.8	67-137	0.367	30	
Perfluorononanesulfonic acid (PFNS)	8.13	1.9	ng/L	9.33		87.2	69-127	1.66	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	9.11	1.9	ng/L	9.72		93.8	50-150	3.74	30	
Perfluoro-1-butanessulfonamide (FBSA)	10.3	1.9	ng/L	9.72		106	50-150	1.30	30	
Perfluorohexanesulfonic acid (PFHxS)	7.72	1.9	ng/L	8.84		87.4	68-131	0.761	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	10.6	1.9	ng/L	9.72		109	50-150	2.30	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.6	1.9	ng/L	9.72		109	50-150	0.245	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.80	1.9	ng/L	9.23		95.3	64-140	2.55	30	
Perfluoropentanesulfonic acid (PFPeS)	8.18	1.9	ng/L	9.13		89.6	71-127	4.82	30	
Perfluoroundecanoic acid (PFUnA)	8.93	1.9	ng/L	9.72		91.9	69-133	7.06	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.49	1.9	ng/L	9.72		97.6	50-150	1.81	30	
Perfluoroheptanoic acid (PFHpA)	9.29	1.9	ng/L	9.72		95.6	72-130	2.35	30	
Perfluorooctanoic acid (PFOA)	9.09	1.9	ng/L	9.72		93.6	71-133	5.92	30	
Perfluorooctanesulfonic acid (PFOS)	7.66	1.9	ng/L	8.99		85.2	65-140	13.9	30	
Perfluorononanoic acid (PFNA)	8.83	1.9	ng/L	9.72		90.9	69-130	5.74	30	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-R(s) (2110575-01) Lab File ID: 2110575-01.d Analyzed: 09/23/21 15:53									
M8FOSA	243368.7	4.01255	298,657.00	4.01255	81	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	147716.9	2.496817	157,413.00	2.496817	94	50 - 150	0.0000	+/-0.50	
M2PFTA	950033.7	4.329683	1,047,075.00	4.32155	91	50 - 150	0.0081	+/-0.50	
M2-8:2FTS	100117.8	3.810767	115,702.00	3.810767	87	50 - 150	0.0000	+/-0.50	
MPFBA	264977.5	1.0917	462,886.00	1.0917	57	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	302109	2.831117	174,842.00	2.831117	173	50 - 150	0.0000	+/-0.50	*
M6PFDA	604709.9	3.811283	559,977.00	3.811283	108	50 - 150	0.0000	+/-0.50	
M3PFBS	144084.8	1.90325	132,517.00	1.90325	109	50 - 150	0.0000	+/-0.50	
M7PFUnA	809729.3	3.954033	748,300.00	3.954033	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90678.39	3.453267	83,643.00	3.453267	108	50 - 150	0.0000	+/-0.50	
M5PFPeA	455460.9	1.731383	458,004.00	1.731383	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	790747.2	2.58055	708,527.00	2.58055	112	50 - 150	0.0000	+/-0.50	
M3PFHxS	100439.7	3.226417	94,231.00	3.218333	107	50 - 150	0.0081	+/-0.50	
M4PFHpA	741769.6	3.186933	686,035.00	3.186933	108	50 - 150	0.0000	+/-0.50	
M8PFOA	658330.4	3.469917	601,545.00	3.469917	109	50 - 150	0.0000	+/-0.50	
M8PFOS	108398.2	3.66015	95,404.00	3.65215	114	50 - 150	0.0080	+/-0.50	
M9PFNA	541766.1	3.661183	478,794.00	3.6532	113	50 - 150	0.0080	+/-0.50	
MPFDoA	783051.9	4.08865	796,851.00	4.08865	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172040.5	3.9615	196,218.00	3.9535	88	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	193152	3.88175	203,643.00	3.88175	95	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-J (2110575-02) Lab File ID: 2110575-02.d Analyzed: 09/23/21 16:00									
M8FOSA	297923.3	4.01255	298,657.00	4.01255	100	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	138543.8	2.496817	157,413.00	2.496817	88	50 - 150	0.0000	+/-0.50	
M2PFTA	1230742	4.32155	1,047,075.00	4.32155	118	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	153720.2	3.810767	115,702.00	3.810767	133	50 - 150	0.0000	+/-0.50	
MPFBA	502249.9	1.0917	462,886.00	1.0917	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	276887.5	2.831117	174,842.00	2.831117	158	50 - 150	0.0000	+/-0.50	*
M6PFDA	693810.5	3.811283	559,977.00	3.811283	124	50 - 150	0.0000	+/-0.50	
M3PFBS	167676.2	1.90325	132,517.00	1.90325	127	50 - 150	0.0000	+/-0.50	
M7PFUnA	945674.8	3.954033	748,300.00	3.954033	126	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	115839.4	3.453267	83,643.00	3.453267	138	50 - 150	0.0000	+/-0.50	
M5PFPeA	542393.1	1.731383	458,004.00	1.731383	118	50 - 150	0.0000	+/-0.50	
M5PFHxA	866943.6	2.58055	708,527.00	2.58055	122	50 - 150	0.0000	+/-0.50	
M3PFHxS	112608	3.226417	94,231.00	3.218333	120	50 - 150	0.0081	+/-0.50	
M4PFHpA	838458.4	3.186933	686,035.00	3.186933	122	50 - 150	0.0000	+/-0.50	
M8PFOA	771891	3.469917	601,545.00	3.469917	128	50 - 150	0.0000	+/-0.50	
M8PFOS	125225.9	3.66015	95,404.00	3.65215	131	50 - 150	0.0080	+/-0.50	
M9PFNA	614773.3	3.661183	478,794.00	3.6532	128	50 - 150	0.0080	+/-0.50	
MPFDoA	970085.8	4.08865	796,851.00	4.08865	122	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	212885	3.9615	196,218.00	3.9535	108	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	244398.6	3.88175	203,643.00	3.88175	120	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-E (2110575-03) Lab File ID: 2110575-03.d Analyzed: 09/23/21 16:07									
M8FOSA	257753	4.01255	298,657.00	4.01255	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	107384	2.496817	157,413.00	2.496817	68	50 - 150	0.0000	+/-0.50	
M2PFTA	1116164	4.32155	1,047,075.00	4.32155	107	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	114133.3	3.810767	115,702.00	3.810767	99	50 - 150	0.0000	+/-0.50	
MPFBA	470364.1	1.0917	462,886.00	1.0917	102	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	316742.5	2.831117	174,842.00	2.831117	181	50 - 150	0.0000	+/-0.50	*
M6PFDA	641443.7	3.811283	559,977.00	3.811283	115	50 - 150	0.0000	+/-0.50	
M3PFBS	150028.1	1.90325	132,517.00	1.90325	113	50 - 150	0.0000	+/-0.50	
M7PFUnA	840696.3	3.954033	748,300.00	3.954033	112	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78490.56	3.453267	83,643.00	3.453267	94	50 - 150	0.0000	+/-0.50	
M5PFPeA	492123.1	1.731383	458,004.00	1.731383	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	785775.9	2.58055	708,527.00	2.58055	111	50 - 150	0.0000	+/-0.50	
M3PFHxS	105339.5	3.226417	94,231.00	3.218333	112	50 - 150	0.0081	+/-0.50	
M4PFHpA	732972.8	3.186933	686,035.00	3.186933	107	50 - 150	0.0000	+/-0.50	
M8PFOA	676044	3.469917	601,545.00	3.469917	112	50 - 150	0.0000	+/-0.50	
M8PFOS	108188.3	3.660133	95,404.00	3.65215	113	50 - 150	0.0080	+/-0.50	
M9PFNA	532566.3	3.661183	478,794.00	3.6532	111	50 - 150	0.0080	+/-0.50	
MPFDoA	850375.3	4.08865	796,851.00	4.08865	107	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	168217	3.9615	196,218.00	3.9535	86	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	214897.5	3.88175	203,643.00	3.88175	106	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-F (2110575-04) Lab File ID: 2110575-04.d Analyzed: 09/23/21 16:14									
M8FOSA	288663.5	4.01255	298,657.00	4.01255	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	147888	2.496817	157,413.00	2.496817	94	50 - 150	0.0000	+/-0.50	
M2PFTA	1192830	4.32155	1,047,075.00	4.32155	114	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	149456.7	3.810767	115,702.00	3.810767	129	50 - 150	0.0000	+/-0.50	
MPFBA	515019.8	1.0917	462,886.00	1.0917	111	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	292796.1	2.831117	174,842.00	2.831117	167	50 - 150	0.0000	+/-0.50	*
M6PFDA	724172.5	3.811283	559,977.00	3.811283	129	50 - 150	0.0000	+/-0.50	
M3PFBS	166846	1.90325	132,517.00	1.90325	126	50 - 150	0.0000	+/-0.50	
M7PFUnA	931317.9	3.954033	748,300.00	3.954033	124	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	89086.95	3.453267	83,643.00	3.453267	107	50 - 150	0.0000	+/-0.50	
M5PFPeA	551633.9	1.731383	458,004.00	1.731383	120	50 - 150	0.0000	+/-0.50	
M5PFHxA	881581	2.58055	708,527.00	2.58055	124	50 - 150	0.0000	+/-0.50	
M3PFHxS	118692	3.218333	94,231.00	3.218333	126	50 - 150	0.0000	+/-0.50	
M4PFHpA	812446.8	3.186933	686,035.00	3.186933	118	50 - 150	0.0000	+/-0.50	
M8PFOA	745724.4	3.469917	601,545.00	3.469917	124	50 - 150	0.0000	+/-0.50	
M8PFOS	118109.6	3.660133	95,404.00	3.65215	124	50 - 150	0.0080	+/-0.50	
M9PFNA	633185.6	3.661183	478,794.00	3.6532	132	50 - 150	0.0080	+/-0.50	
MPFDoA	971733.8	4.08865	796,851.00	4.08865	122	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	186968.9	3.9615	196,218.00	3.9535	95	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	246787.5	3.88175	203,643.00	3.88175	121	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(s) (2110575-05) Lab File ID: 2110575-05.d Analyzed: 09/23/21 16:22									
M8FOSA	49528.88	4.01255	298,657.00	4.01255	17	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	134065.7	2.4886	157,413.00	2.496817	85	50 - 150	-0.0082	+/-0.50	
M2PFTA	138411.8	4.32155	1,047,075.00	4.32155	13	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	100696.5	3.810767	115,702.00	3.810767	87	50 - 150	0.0000	+/-0.50	
MPFBA	491144.3	1.100017	462,886.00	1.0917	106	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	280382.1	2.831117	174,842.00	2.831117	160	50 - 150	0.0000	+/-0.50	*
M6PFDA	473519.6	3.811283	559,977.00	3.811283	85	50 - 150	0.0000	+/-0.50	
M3PFBS	157059.3	1.90325	132,517.00	1.90325	119	50 - 150	0.0000	+/-0.50	
M7PFUnA	398051.8	3.954033	748,300.00	3.954033	53	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	75612.03	3.453267	83,643.00	3.453267	90	50 - 150	0.0000	+/-0.50	
M5PFPeA	525628.8	1.731383	458,004.00	1.731383	115	50 - 150	0.0000	+/-0.50	
M5PFHxA	834630.4	2.572333	708,527.00	2.58055	118	50 - 150	-0.0082	+/-0.50	
M3PFHxS	103786.7	3.218333	94,231.00	3.218333	110	50 - 150	0.0000	+/-0.50	
M4PFHpA	769658.7	3.186933	686,035.00	3.186933	112	50 - 150	0.0000	+/-0.50	
M8PFOA	668589.3	3.469917	601,545.00	3.469917	111	50 - 150	0.0000	+/-0.50	
M8PFOS	86168.62	3.660133	95,404.00	3.65215	90	50 - 150	0.0080	+/-0.50	
M9PFNA	515944.3	3.661183	478,794.00	3.6532	108	50 - 150	0.0080	+/-0.50	
MPFDoA	137201.7	4.08865	796,851.00	4.08865	17	50 - 150	0.0000	+/-0.50	*
d5-NEtFOSAA	86358.25	3.9615	196,218.00	3.9535	44	50 - 150	0.0080	+/-0.50	*
d3-NMeFOSAA	153101.7	3.88175	203,643.00	3.88175	75	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(s) (2110575-05RE1) Lab File ID: 2110575-05RE1.d Analyzed: 09/27/21 14:44									
M8FOSA	36069.07	4.00455	250,282.00	4.00455	14	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	117249.1	2.4804	138,662.00	2.472183	85	50 - 150	0.0082	+/-0.50	
M2PFTA	60786.98	4.32155	993,935.00	4.32155	06	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	88102.85	3.8028	115,726.00	3.8028	76	50 - 150	0.0000	+/-0.50	
MPFBA	425973.4	1.0917	387,274.00	1.0834	110	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	187517	2.81475	135,191.00	2.81475	139	50 - 150	0.0000	+/-0.50	
M6PFDA	466039.1	3.803317	491,648.00	3.803317	95	50 - 150	0.0000	+/-0.50	
M3PFBS	145820.3	1.886683	108,781.00	1.878383	134	50 - 150	0.0083	+/-0.50	
M7PFUnA	447207.3	3.946033	703,950.00	3.946033	64	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	64346.23	3.445283	83,444.00	3.445283	77	50 - 150	0.0000	+/-0.50	
M5PFPeA	474007.4	1.714833	388,897.00	1.706567	122	50 - 150	0.0083	+/-0.50	
M5PFHxA	724405.5	2.564133	581,904.00	2.555917	124	50 - 150	0.0082	+/-0.50	
M3PFHxS	96209.87	3.218333	77,212.00	3.21025	125	50 - 150	0.0081	+/-0.50	
M4PFHpA	689292.6	3.178867	573,666.00	3.178867	120	50 - 150	0.0000	+/-0.50	
M8PFOA	616748.9	3.461933	511,135.00	3.461933	121	50 - 150	0.0000	+/-0.50	
M8PFOS	87506.3	3.65215	82,431.00	3.65215	106	50 - 150	0.0000	+/-0.50	
M9PFNA	454969.3	3.6532	431,895.00	3.653183	105	50 - 150	0.0000	+/-0.50	
MPFDoA	245960.5	4.08065	724,624.00	4.08065	34	50 - 150	0.0000	+/-0.50	*
d5-NEtFOSAA	104277.6	3.9535	164,452.00	3.9535	63	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	154143.4	3.873767	197,279.00	3.873767	78	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(m) (2110575-06) Lab File ID: 2110575-06.d Analyzed: 09/23/21 16:29									
M8FOSA	258410.9	4.01255	298,657.00	4.01255	87	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	141026.9	2.4886	157,413.00	2.496817	90	50 - 150	-0.0082	+/-0.50	
M2PFTA	397625.6	4.32155	1,047,075.00	4.32155	38	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	144809.9	3.810767	115,702.00	3.810767	125	50 - 150	0.0000	+/-0.50	
MPFBA	523835.8	1.100017	462,886.00	1.0917	113	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	326876.4	2.831117	174,842.00	2.831117	187	50 - 150	0.0000	+/-0.50	*
M6PFDA	637910.6	3.811283	559,977.00	3.811283	114	50 - 150	0.0000	+/-0.50	
M3PFBS	171489.9	1.90325	132,517.00	1.90325	129	50 - 150	0.0000	+/-0.50	
M7PFUnA	777601.4	3.954033	748,300.00	3.954033	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	87339.53	3.453267	83,643.00	3.453267	104	50 - 150	0.0000	+/-0.50	
M5PFPeA	568429.9	1.731383	458,004.00	1.731383	124	50 - 150	0.0000	+/-0.50	
M5PFHxA	909134.6	2.572333	708,527.00	2.58055	128	50 - 150	-0.0082	+/-0.50	
M3PFHxS	119156.1	3.218333	94,231.00	3.218333	126	50 - 150	0.0000	+/-0.50	
M4PFHpA	863190.8	3.186933	686,035.00	3.186933	126	50 - 150	0.0000	+/-0.50	
M8PFOA	766526.1	3.469917	601,545.00	3.469917	127	50 - 150	0.0000	+/-0.50	
M8PFOS	121432.4	3.66015	95,404.00	3.65215	127	50 - 150	0.0080	+/-0.50	
M9PFNA	575287.3	3.661183	478,794.00	3.6532	120	50 - 150	0.0080	+/-0.50	
MPFDoA	700874.5	4.08865	796,851.00	4.08865	88	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	182196.6	3.9615	196,218.00	3.9535	93	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	208958.7	3.88175	203,643.00	3.88175	103	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(m) (2110575-06RE1) Lab File ID: 2110575-06RE1.d Analyzed: 09/27/21 14:51									
M8FOSA	55700.27	4.00455	250,282.00	4.00455	22	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	117542.9	2.4804	138,662.00	2.472183	85	50 - 150	0.0082	+/-0.50	
M2PFTA	27163.71	4.32155	993,935.00	4.32155	03	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	86535.38	3.8028	115,726.00	3.8028	75	50 - 150	0.0000	+/-0.50	
MPFBA	434236.7	1.0917	387,274.00	1.0834	112	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	210349.1	2.822933	135,191.00	2.81475	156	50 - 150	0.0082	+/-0.50	*
M6PFDA	401143.1	3.803317	491,648.00	3.803317	82	50 - 150	0.0000	+/-0.50	
M3PFBS	143806	1.886667	108,781.00	1.878383	132	50 - 150	0.0083	+/-0.50	
M7PFUnA	323107.7	3.946033	703,950.00	3.946033	46	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	63088	3.445283	83,444.00	3.445283	76	50 - 150	0.0000	+/-0.50	
M5PFPeA	475647.1	1.7231	388,897.00	1.706567	122	50 - 150	0.0165	+/-0.50	
M5PFHxA	719970.2	2.564117	581,904.00	2.555917	124	50 - 150	0.0082	+/-0.50	
M3PFHxS	97124.66	3.218333	77,212.00	3.21025	126	50 - 150	0.0081	+/-0.50	
M4PFHpA	680426	3.178867	573,666.00	3.178867	119	50 - 150	0.0000	+/-0.50	
M8PFOA	572705.1	3.461933	511,135.00	3.461933	112	50 - 150	0.0000	+/-0.50	
M8PFOS	80841.93	3.65215	82,431.00	3.65215	98	50 - 150	0.0000	+/-0.50	
M9PFNA	450431	3.6532	431,895.00	3.653183	104	50 - 150	0.0000	+/-0.50	
MPFDoA	112948.2	4.08065	724,624.00	4.08065	16	50 - 150	0.0000	+/-0.50	*
d5-NEtFOSAA	76883.97	3.9535	164,452.00	3.9535	47	50 - 150	0.0000	+/-0.50	*
d3-NMeFOSAA	117436.8	3.88175	197,279.00	3.873767	60	50 - 150	0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-I(s) (2110575-07) <div>Lab File ID: 2110575-07.d</div> <div>Analyzed: 09/23/21 16:36</div>									
M8FOSA	284450.2	4.01255	298,657.00	4.01255	95	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	158581.1	2.4886	157,413.00	2.496817	101	50 - 150	-0.0082	+/-0.50	
M2PFTA	1251383	4.32155	1,047,075.00	4.32155	120	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	151147.1	3.810767	115,702.00	3.810767	131	50 - 150	0.0000	+/-0.50	
MPFBA	502266.8	1.0917	462,886.00	1.0917	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	289359.4	2.831117	174,842.00	2.831117	165	50 - 150	0.0000	+/-0.50	*
M6PFDA	712970.5	3.811283	559,977.00	3.811283	127	50 - 150	0.0000	+/-0.50	
M3PFBS	171523.9	1.90325	132,517.00	1.90325	129	50 - 150	0.0000	+/-0.50	
M7PFUnA	916816.9	3.954033	748,300.00	3.954033	123	50 - 150	0.0000	+/-0.50	
M5PFPeA	544871.7	1.731383	458,004.00	1.731383	119	50 - 150	0.0000	+/-0.50	
M5PFHxA	888112.5	2.58055	708,527.00	2.58055	125	50 - 150	0.0000	+/-0.50	
M3PFHxS	114127.4	3.226417	94,231.00	3.218333	121	50 - 150	0.0081	+/-0.50	
M4PFHpA	846709.4	3.186933	686,035.00	3.186933	123	50 - 150	0.0000	+/-0.50	
M8PFOA	723768.4	3.469917	601,545.00	3.469917	120	50 - 150	0.0000	+/-0.50	
M8PFOS	125050.4	3.66015	95,404.00	3.65215	131	50 - 150	0.0080	+/-0.50	
M9PFNA	606351.9	3.661183	478,794.00	3.6532	127	50 - 150	0.0080	+/-0.50	
MPFDaA	1021820	4.08865	796,851.00	4.08865	128	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	204891.7	3.9615	196,218.00	3.9535	104	50 - 150	0.0080	+/-0.50	
d3-NMeFOSAA	221353.3	3.88175	203,643.00	3.88175	109	50 - 150	0.0000	+/-0.50	
HW-I(s) (2110575-07RE1) <div>Lab File ID: 2110575-07RE1.d</div> <div>Analyzed: 09/27/21 14:58</div>									
M3HFPO-DA	216769.3	2.81475	135,191.00	2.81475	160	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	78193.45	3.445283	83,444.00	3.445283	94	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-1(m) (2110575-08) Lab File ID: 2110575-08.d Analyzed: 09/23/21 16:58									
M8FOSA	299367.8	4.01255	298,657.00	4.01255	100	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	132607.3	2.496817	157,413.00	2.4886	84	50 - 150	0.0082	+/-0.50	
M2PFTA	1317053	4.32155	1,047,075.00	4.32155	126	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	132671.5	3.810767	115,702.00	3.810767	115	50 - 150	0.0000	+/-0.50	
MPFBA	512920.5	1.100017	462,886.00	1.0917	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	305098.9	2.8393	174,842.00	2.831117	174	50 - 150	0.0082	+/-0.50	*
M6PFDA	765189.3	3.811283	559,977.00	3.811283	137	50 - 150	0.0000	+/-0.50	
M3PFBS	168055.7	1.90325	132,517.00	1.90325	127	50 - 150	0.0000	+/-0.50	
M7PFUnA	986424.8	3.954033	748,300.00	3.954033	132	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	92235.89	3.453267	83,643.00	3.453267	110	50 - 150	0.0000	+/-0.50	
M5PFPeA	559891.8	1.731383	458,004.00	1.731383	122	50 - 150	0.0000	+/-0.50	
M5PFHxA	897813.6	2.58055	708,527.00	2.572333	127	50 - 150	0.0082	+/-0.50	
M3PFHxS	116764.4	3.226417	94,231.00	3.218333	124	50 - 150	0.0081	+/-0.50	
M4PFHpA	853985.2	3.186933	686,035.00	3.186933	124	50 - 150	0.0000	+/-0.50	
M8PFOA	761896.4	3.469917	601,545.00	3.469917	127	50 - 150	0.0000	+/-0.50	
M8PFOS	122130.1	3.660133	95,404.00	3.660133	128	50 - 150	0.0000	+/-0.50	
M9PFNA	658086.3	3.661183	478,794.00	3.661183	137	50 - 150	0.0000	+/-0.50	
MPFDoA	1019942	4.08865	796,851.00	4.08865	128	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	212942	3.9615	196,218.00	3.9615	109	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	248642.3	3.88175	203,643.00	3.88175	122	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-1(d) (2110575-09)		Lab File ID: 2110575-09.d				Analyzed: 09/23/21 17:05			
M8FOSA	265095.5	4.01255	298,657.00	4.01255	89	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	119456	2.4886	157,413.00	2.4886	76	50 - 150	0.0000	+/-0.50	
M2PFTA	869482.8	4.32155	1,047,075.00	4.32155	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	117409.3	3.810767	115,702.00	3.810767	101	50 - 150	0.0000	+/-0.50	
MPFBA	476059.7	1.100017	462,886.00	1.0917	103	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	268445.9	2.831117	174,842.00	2.831117	154	50 - 150	0.0000	+/-0.50	*
M6PFDA	664862.3	3.811283	559,977.00	3.811283	119	50 - 150	0.0000	+/-0.50	
M3PFBS	163088.2	1.90325	132,517.00	1.90325	123	50 - 150	0.0000	+/-0.50	
M7PFUnA	825967.9	3.954033	748,300.00	3.954033	110	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	86748.25	3.453267	83,643.00	3.453267	104	50 - 150	0.0000	+/-0.50	
M5PFPeA	546620.9	1.731383	458,004.00	1.731383	119	50 - 150	0.0000	+/-0.50	
M5PFHxA	861759.6	2.572333	708,527.00	2.572333	122	50 - 150	0.0000	+/-0.50	
M3PFHxS	109607	3.226417	94,231.00	3.218333	116	50 - 150	0.0081	+/-0.50	
M4PFHpA	813225.6	3.186933	686,035.00	3.186933	119	50 - 150	0.0000	+/-0.50	
M8PFOA	756609.3	3.469917	601,545.00	3.469917	126	50 - 150	0.0000	+/-0.50	
M8PFOS	119062.8	3.66015	95,404.00	3.660133	125	50 - 150	0.0000	+/-0.50	
M9PFNA	579231.4	3.661183	478,794.00	3.661183	121	50 - 150	0.0000	+/-0.50	
MPFDoA	887678.9	4.08865	796,851.00	4.08865	111	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	173693.8	3.9615	196,218.00	3.9615	89	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	214176	3.88175	203,643.00	3.88175	105	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-19(d) (2110575-10) Lab File ID: 2110575-10.d Analyzed: 09/23/21 17:12									
M8FOSA	330461.1	4.01255	298,657.00	4.01255	111	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	144494.7	2.4886	157,413.00	2.4886	92	50 - 150	0.0000	+/-0.50	
M2PFTA	1346356	4.32155	1,047,075.00	4.32155	129	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	159443.2	3.810767	115,702.00	3.810767	138	50 - 150	0.0000	+/-0.50	
MPFBA	548237.7	1.0917	462,886.00	1.0917	118	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	667321.8	2.831117	174,842.00	2.831117	382	50 - 150	0.0000	+/-0.50	*
M6PFDA	743141.6	3.811283	559,977.00	3.811283	133	50 - 150	0.0000	+/-0.50	
M3PFBS	177440	1.90325	132,517.00	1.90325	134	50 - 150	0.0000	+/-0.50	
M7PFUnA	1055196	3.954033	748,300.00	3.954033	141	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	93556.4	3.453267	83,643.00	3.453267	112	50 - 150	0.0000	+/-0.50	
M5PFPeA	580976.8	1.731383	458,004.00	1.731383	127	50 - 150	0.0000	+/-0.50	
M5PFHxA	938804.8	2.572333	708,527.00	2.572333	133	50 - 150	0.0000	+/-0.50	
M3PFHxS	122746	3.226417	94,231.00	3.218333	130	50 - 150	0.0081	+/-0.50	
M4PFHpA	900026.8	3.186933	686,035.00	3.186933	131	50 - 150	0.0000	+/-0.50	
M8PFOA	799472	3.469917	601,545.00	3.469917	133	50 - 150	0.0000	+/-0.50	
M8PFOS	123760.4	3.660133	95,404.00	3.660133	130	50 - 150	0.0000	+/-0.50	
M9PFNA	640463	3.661183	478,794.00	3.661183	134	50 - 150	0.0000	+/-0.50	
MPFDoA	1013215	4.08865	796,851.00	4.08865	127	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	205666.7	3.9615	196,218.00	3.9615	105	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	241482.7	3.88175	203,643.00	3.88175	119	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-X(s) (2110575-11) Lab File ID: 2110575-11.d Analyzed: 09/23/21 17:19									
M8FOSA	307244.8	4.01255	298,657.00	4.01255	103	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	137717.2	2.4886	157,413.00	2.4886	87	50 - 150	0.0000	+/-0.50	
M2PFTA	1357043	4.32155	1,047,075.00	4.32155	130	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	144574.7	3.810767	115,702.00	3.810767	125	50 - 150	0.0000	+/-0.50	
MPFBA	572703.8	1.0917	462,886.00	1.0917	124	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	348733.8	2.831117	174,842.00	2.831117	199	50 - 150	0.0000	+/-0.50	*
M6PFDA	787145.8	3.811283	559,977.00	3.811283	141	50 - 150	0.0000	+/-0.50	
M3PFBS	180121.5	1.90325	132,517.00	1.90325	136	50 - 150	0.0000	+/-0.50	
M7PFUnA	1015399	3.954033	748,300.00	3.954033	136	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	91340.73	3.453267	83,643.00	3.453267	109	50 - 150	0.0000	+/-0.50	
M5PFPeA	602812.8	1.731383	458,004.00	1.731383	132	50 - 150	0.0000	+/-0.50	
M5PFHxA	970981.6	2.572333	708,527.00	2.572333	137	50 - 150	0.0000	+/-0.50	
M3PFHxS	120194.3	3.226417	94,231.00	3.218333	128	50 - 150	0.0081	+/-0.50	
M4PFHpA	893931.6	3.186933	686,035.00	3.186933	130	50 - 150	0.0000	+/-0.50	
M8PFOA	809268.8	3.469917	601,545.00	3.469917	135	50 - 150	0.0000	+/-0.50	
M8PFOS	130610.4	3.66015	95,404.00	3.660133	137	50 - 150	0.0000	+/-0.50	
M9PFNA	684523.3	3.661183	478,794.00	3.661183	143	50 - 150	0.0000	+/-0.50	
MPFDoA	1016728	4.08865	796,851.00	4.08865	128	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	187834.3	3.9615	196,218.00	3.9615	96	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	273221.3	3.88175	203,643.00	3.88175	134	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-X(m) (2110575-12) Lab File ID: 2110575-12.d Analyzed: 09/23/21 17:26									
M8FOSA	278474.7	4.01255	298,657.00	4.01255	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	128153.1	2.4886	157,413.00	2.4886	81	50 - 150	0.0000	+/-0.50	
M2PFTA	1134451	4.32155	1,047,075.00	4.32155	108	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	136827	3.810767	115,702.00	3.810767	118	50 - 150	0.0000	+/-0.50	
MPFBA	486585.4	1.100017	462,886.00	1.0917	105	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	302946.5	2.831117	174,842.00	2.831117	173	50 - 150	0.0000	+/-0.50	*
M6PFDA	658470.2	3.811283	559,977.00	3.811283	118	50 - 150	0.0000	+/-0.50	
M3PFBS	159220.3	1.90325	132,517.00	1.90325	120	50 - 150	0.0000	+/-0.50	
M7PFUnA	956657.3	3.954033	748,300.00	3.954033	128	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	80089.95	3.453267	83,643.00	3.453267	96	50 - 150	0.0000	+/-0.50	
M5PFPeA	532171.6	1.731383	458,004.00	1.731383	116	50 - 150	0.0000	+/-0.50	
M5PFHxA	853666.1	2.572333	708,527.00	2.572333	120	50 - 150	0.0000	+/-0.50	
M3PFHxS	112201.5	3.226417	94,231.00	3.218333	119	50 - 150	0.0081	+/-0.50	
M4PFHpA	827011.3	3.186933	686,035.00	3.186933	121	50 - 150	0.0000	+/-0.50	
M8PFOA	726155.6	3.469917	601,545.00	3.469917	121	50 - 150	0.0000	+/-0.50	
M8PFOS	112376.6	3.660133	95,404.00	3.660133	118	50 - 150	0.0000	+/-0.50	
M9PFNA	571065.2	3.661183	478,794.00	3.661183	119	50 - 150	0.0000	+/-0.50	
MPFDoA	920113.5	4.08865	796,851.00	4.08865	115	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	179170.5	3.9615	196,218.00	3.9615	91	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	217431.5	3.88175	203,643.00	3.88175	107	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B290193-BLK1)			Lab File ID: B290193-BLK1.d			Analyzed: 09/17/21 19:48			
M8FOSA	345722.7	4.00455	369,591.00	4.00455	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	153518.1	2.496817	158,816.00	2.496817	97	50 - 150	0.0000	+/-0.50	
M2PFTA	1257450	4.32155	1,328,511.00	4.32155	95	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	121288.2	3.8028	92,666.00	3.810767	131	50 - 150	-0.0080	+/-0.50	
MPFBA	699285.9	1.0917	585,136.00	1.0917	120	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	227540.6	2.8393	198,070.00	2.8393	115	50 - 150	0.0000	+/-0.50	
M6PFDA	855219.2	3.803317	707,695.00	3.803317	121	50 - 150	0.0000	+/-0.50	
M3PFBS	167270.5	1.911533	165,269.00	1.90325	101	50 - 150	0.0083	+/-0.50	
M7PFUnA	1073297	3.946033	942,111.00	3.946033	114	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	83873.37	3.453267	79,940.00	3.453267	105	50 - 150	0.0000	+/-0.50	
M5PFPeA	651597.8	1.731383	583,615.00	1.731383	112	50 - 150	0.0000	+/-0.50	
M5PFHxA	973016.9	2.58055	912,809.00	2.588767	107	50 - 150	-0.0082	+/-0.50	
M3PFHxS	113064.6	3.218333	118,966.00	3.218333	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	959413.6	3.186933	872,221.00	3.186933	110	50 - 150	0.0000	+/-0.50	
M8PFOA	871315.8	3.461933	754,054.00	3.469917	116	50 - 150	-0.0080	+/-0.50	
M8PFOS	126071.3	3.65215	125,235.00	3.65215	101	50 - 150	0.0000	+/-0.50	
M9PFNA	720073.1	3.653183	634,069.00	3.6532	114	50 - 150	0.0000	+/-0.50	
MPFDoA	1036180	4.08065	983,581.00	4.08065	105	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	245184.2	3.9535	188,700.00	3.9535	130	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	305551.9	3.88175	272,416.00	3.88175	112	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B290193-BS1)		Lab File ID: B290193-BS1.d				Analyzed: 09/17/21 19:33			
M8FOSA	288324.7	4.00455	369,591.00	4.00455	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	146211.1	2.505033	158,816.00	2.496817	92	50 - 150	0.0082	+/-0.50	
M2PFTA	1128587	4.32155	1,328,511.00	4.32155	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	104509.1	3.810767	92,666.00	3.810767	113	50 - 150	0.0000	+/-0.50	
MPFBA	665400.7	1.0917	585,136.00	1.0917	114	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	273163.2	2.8393	198,070.00	2.8393	138	50 - 150	0.0000	+/-0.50	
M6PFDA	826576.9	3.803317	707,695.00	3.803317	117	50 - 150	0.0000	+/-0.50	
M3PFBS	156984.5	1.911533	165,269.00	1.90325	95	50 - 150	0.0083	+/-0.50	
M7PFUnA	1066784	3.946033	942,111.00	3.946033	113	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	77403.84	3.453267	79,940.00	3.453267	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	611097.9	1.741117	583,615.00	1.731383	105	50 - 150	0.0097	+/-0.50	
M5PFHxA	939046.4	2.588767	912,809.00	2.588767	103	50 - 150	0.0000	+/-0.50	
M3PFHxS	109178.4	3.218333	118,966.00	3.218333	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	892269.8	3.186933	872,221.00	3.186933	102	50 - 150	0.0000	+/-0.50	
M8PFOA	785627.6	3.469917	754,054.00	3.469917	104	50 - 150	0.0000	+/-0.50	
M8PFOS	124172.2	3.65215	125,235.00	3.65215	99	50 - 150	0.0000	+/-0.50	
M9PFNA	671046.3	3.653183	634,069.00	3.6532	106	50 - 150	0.0000	+/-0.50	
MPFDoA	947818.8	4.08065	983,581.00	4.08065	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	190612.5	3.9535	188,700.00	3.9535	101	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	273729.5	3.88175	272,416.00	3.88175	100	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B290193-BSD1) Lab File ID: B290193-BSD1.d Analyzed: 09/17/21 19:41									
M8FOSA	325373.4	4.00455	369,591.00	4.00455	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	148906.6	2.496817	158,816.00	2.496817	94	50 - 150	0.0000	+/-0.50	
M2PFTA	1283329	4.32155	1,328,511.00	4.32155	97	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	112040.1	3.810767	92,666.00	3.810767	121	50 - 150	0.0000	+/-0.50	
MPFBA	658822.6	1.0917	585,136.00	1.0917	113	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	230800.8	2.8393	198,070.00	2.8393	117	50 - 150	0.0000	+/-0.50	
M6PFDA	763013.8	3.803317	707,695.00	3.803317	108	50 - 150	0.0000	+/-0.50	
M3PFBS	149789.6	1.911533	165,269.00	1.90325	91	50 - 150	0.0083	+/-0.50	
M7PFUnA	980950.6	3.946033	942,111.00	3.946033	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78224.07	3.453267	79,940.00	3.453267	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	613204.1	1.731383	583,615.00	1.731383	105	50 - 150	0.0000	+/-0.50	
M5PFHxA	932257.4	2.588767	912,809.00	2.588767	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	103605	3.218333	118,966.00	3.218333	87	50 - 150	0.0000	+/-0.50	
M4PFHpA	875828.1	3.186933	872,221.00	3.186933	100	50 - 150	0.0000	+/-0.50	
M8PFOA	850063	3.461933	754,054.00	3.469917	113	50 - 150	-0.0080	+/-0.50	
M8PFOS	121188.9	3.65215	125,235.00	3.65215	97	50 - 150	0.0000	+/-0.50	
M9PFNA	640080.3	3.653183	634,069.00	3.6532	101	50 - 150	0.0000	+/-0.50	
MPFDoA	1079706	4.08065	983,581.00	4.08065	110	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	224172.5	3.9535	188,700.00	3.9535	119	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	254087.3	3.88175	272,416.00	3.88175	93	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B290910-BLK1) Lab File ID: B290910-BLK1.d Analyzed: 09/27/21 14:36									
M8FOSA	290964.8	4.00455	250,282.00	4.00455	116	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	173574.7	2.472183	138,662.00	2.472183	125	50 - 150	0.0000	+/-0.50	
M2PFTA	1163232	4.32155	993,935.00	4.32155	117	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	134833.6	3.8028	115,726.00	3.8028	117	50 - 150	0.0000	+/-0.50	
MPFBA	535824.4	1.0834	387,274.00	1.0834	138	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	172868.6	2.81475	135,191.00	2.81475	128	50 - 150	0.0000	+/-0.50	
M6PFDA	632471.4	3.803317	491,648.00	3.803317	129	50 - 150	0.0000	+/-0.50	
M3PFBS	142590.8	1.878383	108,781.00	1.878383	131	50 - 150	0.0000	+/-0.50	
M7PFUnA	861437.9	3.946033	703,950.00	3.946033	122	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	110641.5	3.445283	83,444.00	3.445283	133	50 - 150	0.0000	+/-0.50	
M5PFPeA	514168.9	1.714833	388,897.00	1.706567	132	50 - 150	0.0083	+/-0.50	
M5PFHxA	760222.6	2.555917	581,904.00	2.555917	131	50 - 150	0.0000	+/-0.50	
M3PFHxS	100070.5	3.21025	77,212.00	3.21025	130	50 - 150	0.0000	+/-0.50	
M4PFHpA	749311	3.178867	573,666.00	3.178867	131	50 - 150	0.0000	+/-0.50	
M8PFOA	696939.8	3.461933	511,135.00	3.461933	136	50 - 150	0.0000	+/-0.50	
M8PFOS	100875.5	3.65215	82,431.00	3.65215	122	50 - 150	0.0000	+/-0.50	
M9PFNA	545483.2	3.653183	431,895.00	3.653183	126	50 - 150	0.0000	+/-0.50	
MPFDoA	829980.3	4.08065	724,624.00	4.08065	115	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	197879.5	3.9535	164,452.00	3.9535	120	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	230459.6	3.873767	197,279.00	3.873767	117	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B290910-BS1)		Lab File ID: B290910-BS1.d				Analyzed: 09/27/21 14:22			
M8FOSA	292935	4.00455	250,282.00	4.00455	117	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	164609.4	2.4804	138,662.00	2.472183	119	50 - 150	0.0082	+/-0.50	
M2PFTA	1106448	4.321567	993,935.00	4.32155	111	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	134377.3	3.8028	115,726.00	3.8028	116	50 - 150	0.0000	+/-0.50	
MPFBA	517644.5	1.0917	387,274.00	1.0834	134	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	199553	2.822933	135,191.00	2.81475	148	50 - 150	0.0082	+/-0.50	
M6PFDA	678474.3	3.803317	491,648.00	3.803317	138	50 - 150	0.0000	+/-0.50	
M3PFBS	140707.4	1.886667	108,781.00	1.878383	129	50 - 150	0.0083	+/-0.50	
M7PFUnA	857572.3	3.946033	703,950.00	3.946033	122	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	98875.19	3.453267	83,444.00	3.445283	118	50 - 150	0.0080	+/-0.50	
M5PFPeA	511004.3	1.7231	388,897.00	1.706567	131	50 - 150	0.0165	+/-0.50	
M5PFHxA	762711.8	2.564117	581,904.00	2.555917	131	50 - 150	0.0082	+/-0.50	
M3PFHxS	98289.29	3.218333	77,212.00	3.21025	127	50 - 150	0.0081	+/-0.50	
M4PFHpA	743176.8	3.178867	573,666.00	3.178867	130	50 - 150	0.0000	+/-0.50	
M8PFOA	682188.5	3.461933	511,135.00	3.461933	133	50 - 150	0.0000	+/-0.50	
M8PFOS	100311.6	3.65215	82,431.00	3.65215	122	50 - 150	0.0000	+/-0.50	
M9PFNA	588048.9	3.6532	431,895.00	3.653183	136	50 - 150	0.0000	+/-0.50	
MPFDoA	909008.3	4.08065	724,624.00	4.08065	125	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	196021.8	3.9535	164,452.00	3.9535	119	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	231359.5	3.88175	197,279.00	3.873767	117	50 - 150	0.0080	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B290910-BSD1) Lab File ID: B290910-BSD1.d Analyzed: 09/27/21 14:29									
M8FOSA	246948.9	4.00455	250,282.00	4.00455	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	151703.3	2.4804	138,662.00	2.472183	109	50 - 150	0.0082	+/-0.50	
M2PFTA	834743.1	4.321567	993,935.00	4.32155	84	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	124165.5	3.8028	115,726.00	3.8028	107	50 - 150	0.0000	+/-0.50	
MPFBA	487590.6	1.0917	387,274.00	1.0834	126	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	202268.2	2.81475	135,191.00	2.81475	150	50 - 150	0.0000	+/-0.50	
M6PFDA	556689.7	3.803317	491,648.00	3.803317	113	50 - 150	0.0000	+/-0.50	
M3PFBS	124331.6	1.886667	108,781.00	1.878383	114	50 - 150	0.0083	+/-0.50	
M7PFUnA	740258.3	3.946033	703,950.00	3.946033	105	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90632.34	3.453267	83,444.00	3.445283	109	50 - 150	0.0080	+/-0.50	
M5PFPeA	461520.3	1.714833	388,897.00	1.706567	119	50 - 150	0.0083	+/-0.50	
M5PFHxA	694947.3	2.564133	581,904.00	2.555917	119	50 - 150	0.0082	+/-0.50	
M3PFHxS	86675.34	3.218333	77,212.00	3.21025	112	50 - 150	0.0081	+/-0.50	
M4PFHpA	680081.9	3.178867	573,666.00	3.178867	119	50 - 150	0.0000	+/-0.50	
M8PFOA	610742.9	3.461933	511,135.00	3.461933	119	50 - 150	0.0000	+/-0.50	
M8PFOS	92554.88	3.65215	82,431.00	3.65215	112	50 - 150	0.0000	+/-0.50	
M9PFNA	506076.2	3.6532	431,895.00	3.653183	117	50 - 150	0.0000	+/-0.50	
MPFDoA	701240.9	4.08065	724,624.00	4.08065	97	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	169586	3.9535	164,452.00	3.9535	103	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	207519.4	3.88175	197,279.00	3.873767	105	50 - 150	0.0080	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Drinking Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Minor)	NH-P
9Cl-PF3ONS (F53B Major)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanefulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropetanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Minor)	NH-P
9Cl-PF3ONS (F53B Major)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P

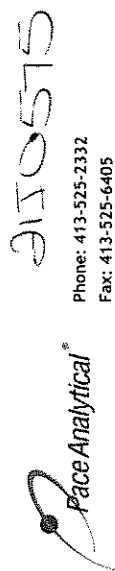
39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBDA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022



Phone: 413-525-2332
Fax: 413-525-6405

Access COC's and Support Requests

Company Name: **Horsley Witten Group**
Address: **90 Rte 6A Unit 1 Sandwich, MA**
Phone: **508-833-6600**

Project Name: **Hyattsville**
Project Location: **Hyattsville**

Project Number:

Project Manager: **Bryan Massa**

Pace Quote Name/Number:

Invoice Recipient:

Sampled By:

<http://www.pacelabs.com>

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Requested Analysis: ☒ PFAS 10-Day (std) ☐ 10-Day ☐ Due Date: ☐ Rush Approval Required ☐ 3-Day ☐ 4-Day ☐ Field Filtered ☐ Lab to Filter ☐ Field Filtered ☐ Lab to Filter ☐ Other: ☐ SOXHLET ☐ NON-SOXHLET

Format: ☒ PDF ☐ EXCEL ☐ Other: ☐ PCB ONLY

CLP Like Data Pkg Required: ☐ Email To: **bmassa@horsleywitten.com** Fax To #:

Pace Work Order #	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	ANALYSIS REQUESTED	Preservation Code	Courier Use Only
01	HW-R(s)	9/8	12:45	Grab	GW									
02	HW-S	9/8	13:30											
03	HW-E	9/8	11:45											
04	HW-F	9/8	12:15											
05	HW-P(s)	9/8	13:15											
06	HW-P(m)	9/8	13:30											
07	HW-I(s)	9/8	10:30											
08	HW-I(m)	9/8	10:55											
09	HW-I(d)	9/8	11:10											
10	OW-19(d)	9/11	17:30											
Relinquished by: (signature)	MA MCP	9/13 10:30												
Received by: (signature)	GW-1	9/13 10:30												
Relinquished by: (signature)		9/13 10:30												
Received by: (signature)		9/13 10:30												
Relinquished by: (signature)		9/13 10:30												
Received by: (signature)		9/13 10:30												
Relinquished by: (signature)		9/13 10:30												
Received by: (signature)		9/13 10:30												
Relinquished by: (signature)		9/13 10:30												
Received by: (signature)		9/13 10:30												

PFAS bottles are TRI preserved;
Run isotope method any ways

MA MCP Required ☒ MA MCP Form Required ☐
MCP Certification Form Required ☐
CT RCP Required ☐
RCP Certification Form Required ☐
MA State-DW Required ☐
PSWD # ☐
Project Entity: ☐ Government ☐ Federal ☐ City ☐ Municipality ☐ 21 J ☐ Brownfield ☐ MBTA ☐ School ☐ MBTA ☐ WRTA ☐ Other ☐ Chromatogram ☐ AIHA-LAP, LLC ☐

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley Witten Group

Received By RLF Date 9/13/01 Time 1535

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 16°C
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T

pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? NA MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? _____ Acid NA Base NA

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	<u>24</u>	4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

September 16, 2021

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 20102
Laboratory Work Order Number: 21I0577

Enclosed are results of analyses for samples received by the laboratory on September 13, 2021. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Matthew J Beaupre
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 9/16/2021

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20102

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 2110577

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

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-E	2110577-01	Ground Water		SW-846 8270D-E	
HW-J	2110577-02	Ground Water		SW-846 8270D-E	
HW-X(s)	2110577-03	Ground Water		SW-846 8270D-E	
HW-X(m)	2110577-04	Ground Water		SW-846 8270D-E	

CASE NARRATIVE SUMMARY

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

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

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110577

Date Received: 9/13/2021

Field Sample #: HW-E

Sampled: 9/10/2021 13:45

Sample ID: 2110577-01

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	µg/L	1		SW-846 8270D-E	9/14/21	9/15/21 10:04	IMR
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
1,4-Dioxane-d8	25.0	15-110						9/15/21 10:04	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110577

Date Received: 9/13/2021

Field Sample #: HW-J

Sampled: 9/10/2021 13:30

Sample ID: 2110577-02

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	µg/L	1		SW-846 8270D-E	9/14/21	9/15/21 10:24	IMR
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
1,4-Dioxane-d8	16.1	15-110						9/15/21 10:24	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110577

Date Received: 9/13/2021

Field Sample #: HW-X(s)

Sampled: 9/10/2021 10:55

Sample ID: 2110577-03

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.19	µg/L	1		SW-846 8270D-E	9/14/21	9/15/21 10:45	IMR
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
1,4-Dioxane-d8	21.5	15-110						9/15/21 10:45	

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

Project Location: Hyannis, MA

Sample Description:

Work Order: 2110577

Date Received: 9/13/2021

Field Sample #: HW-X(m)

Sampled: 9/10/2021 11:15

Sample ID: 2110577-04

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.22	µg/L	1		SW-846 8270D-E	9/14/21	9/15/21 11:05	IMR
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
1,4-Dioxane-d8	16.9	15-110						9/15/21 11:05	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data****Prep Method: SW-846 3510C Analytical Method: SW-846 8270D-E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
21I0577-01 [HW-E]	B290145	1020	1.00	09/14/21
21I0577-02 [HW-J]	B290145	1000	1.00	09/14/21
21I0577-03 [HW-X(s)]	B290145	1040	1.00	09/14/21
21I0577-04 [HW-X(m)]	B290145	930	1.00	09/14/21

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch B290145 - SW-846 3510C									
Blank (B290145-BLK1)									
				Prepared: 09/14/21 Analyzed: 09/15/21					
1,4-Dioxane	ND	0.20	µg/L						
Surrogate: 1,4-Dioxane-d8	2.03		µg/L	10.0		20.3	15-110		
LCS (B290145-BS1)									
				Prepared: 09/14/21 Analyzed: 09/15/21					
1,4-Dioxane	9.19	0.20	µg/L	10.0		91.9	40-140		
Surrogate: 1,4-Dioxane-d8	1.54		µg/L	10.0		15.4	15-110		
LCS Dup (B290145-BSD1)									
				Prepared: 09/14/21 Analyzed: 09/15/21					
1,4-Dioxane	9.60	0.20	µg/L	10.0		96.0	40-140	4.33	30
Surrogate: 1,4-Dioxane-d8	1.78		µg/L	10.0		17.8	15-110		

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**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 is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
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.

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 8270D-E in Water

1,4-Dioxane NY

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2022
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00112	12/30/2021
NC	North Carolina Div. of Water Quality	652	12/31/2021
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2021
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2021

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

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

Client Horsley Witten Group

Received By RLF Date 9/13/21 Time 1535

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 3.8°C
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T
pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? NA

Proper Media/Containers Used? T MS/MSD? F

Were trip blanks received? F Is splitting samples required? F

Do all samples have the proper pH? _____ On COC? F Acid NA Base NA

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	<u>3</u>	1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: Con-Test, a Pace Analytical Laboratory				Project #: 21I0577	
Project Location: Hyannis, MA				RTN:	
This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)] 21I0577-01 thru 21I0577-04					
Matrices: Water					
CAM Protocol (check all that below)					
8260 VOC CAM II A ()	7470/7471 Hg CAM IIIB ()	MassDEP VPH CAM IV A ()	8082 PCB CAM V A ()	9014 Total Cyanide/PAC CAM VI A ()	6860 Perchlorate CAM VIII B ()
8270 SVOC CAM II B (X)	7010 Metals CAM III C ()	MassDEP VPH CAM IV C ()	8081 Pesticides CAM V B ()	7196 Hex Cr CAM VI B ()	MassDEP APH CAM IX A ()
6010 Metals CAM III A ()	6020 Metals CAM III D ()	MassDEP EPH CAM IV B ()	8151 Herbicides CAM V C ()	8330 Explosives CAM VIII A ()	TO-15 VOC CAM IX B ()
Affirmative response to Questions A through F is required for "Presumptive Certainty" status					
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
E a	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).				<input type="checkbox"/> Yes <input type="checkbox"/> No ¹
E b	APH and TO-15 Methods only: Was the complete analyte list reported for each method?				<input type="checkbox"/> Yes <input type="checkbox"/> No ¹
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all No responses to Questions A through E)?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
A response to questions G, H and I below is required for "Presumptive Certainty" status					
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.					
H	Were all QC performance standards specified in the CAM protocol(s) achieved?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ¹
¹ All Negative responses must be addressed in an attached Environmental Laboratory case narrative.					
I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.					
Signature: <u>Lisa Worthington</u>		Position: <u>Technical Representative</u>			
Printed Name: <u>Lisa A. Worthington</u>		Date: <u>09/16/21</u>			



ANALYTICAL REPORT

Lab Number:	L2148623
Client:	Horseley & Witten, Inc. Sextant Hill Office Park 90 Route 6A Sandwich, MA 02563
ATTN:	Brian Massa
Phone:	(508) 833-6600
Project Name:	CAPE COD GATEWAY AIRPORT
Project Number:	Not Specified
Report Date:	09/19/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2148623-01	HW-X(M) 5-7	SOIL	HYANNIS	09/07/21 09:05	09/09/21
L2148623-02	HW-X(M) 7-9	SOIL	HYANNIS	09/07/21 09:15	09/09/21

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

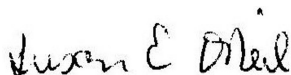
L2148623-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The Extracted Internal Standard is less than 10% for d3-NMeFOSAA and d3-NMeFOSAA; however, the results are confirmed by the batch QC performed on this sample.

The WG1545564-1 Method Blank, associated with L2148623-02, has a concentration above the reporting limit for PFNA PFUnA & PFTTrDA. Since the associated sample concentrations are non-detect to the reporting limit, no corrective action is required.

WG1545564-3 and WG1545564-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 09/19/21

ORGANICS

SEMIVOLATILES

Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21**SAMPLE RESULTS**

Lab ID: L2148623-02

Date Collected: 09/07/21 09:15

Client ID: HW-X(M) 7-9

Date Received: 09/09/21

Sample Location: HYANNIS

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Extraction Method: ALPHA 23528

Analytical Method: 134,LCMSMS-ID

Extraction Date: 09/13/21 10:38

Analytical Date: 09/14/21 10:28

Analyst: HT

Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.477	0.022	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.477	0.044	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.239	0.037	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.955	0.062	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.477	0.050	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.955	0.080	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.239	0.043	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.239	0.058	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.239	0.040	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.477	0.171	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.477	0.130	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.239	0.072	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.239	0.124	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.239	0.064	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.477	0.274	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.955	0.285	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.477	0.192	1
Perfluoroundecanoic Acid (PFUnA)	0.139	JB	ng/g	0.477	0.045	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.477	0.146	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.477	0.094	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.477	0.081	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.477	0.067	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.477	0.195	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.477	0.052	1

Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21**SAMPLE RESULTS**

Lab ID: L2148623-02

Date Collected: 09/07/21 09:15

Client ID: HW-X(M) 7-9

Date Received: 09/09/21

Sample Location: HYANNIS

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)	% Recovery			Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)	66				61-135	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	62				58-150	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76				74-139	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65				14-167	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68				66-128	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68			Q	71-129	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76			Q	78-139	
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68			Q	75-130	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73				20-154	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70			Q	72-140	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78			Q	79-136	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69			Q	75-130	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74				19-175	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	3			Q	31-134	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69				61-155	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	76				10-117	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	5			Q	34-137	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60				54-150	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	31				24-159	

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/21 08:32
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 09/13/21 10:38

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1545564-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.500	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.250	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.250	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.250	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.250	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.136
Perfluorononanoic Acid (PFNA)	0.697		ng/g	0.250	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.250	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.250	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.322	J	ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	2.12		ng/g	0.500	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.442	J	ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	1.92		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	0.066	J	ng/g	0.500	0.054

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 09/14/21 08:32
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 09/13/21 10:38

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1545564-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	83		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		24-159

Lab Control Sample Analysis Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2148623

Report Date: 09/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1545564-2								
Perfluorobutanoic Acid (PFBA)	97		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	96		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	100		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	94		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	98		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	103		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	100		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	95		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	98		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	91		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	116		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	89		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	95		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	99		-		69-135	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Lab Number: L2148623

Project Number: Not Specified

Report Date: 09/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1545564-2								
Perfluorotridecanoic Acid (PFTTrDA)	130		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	107		-		69-133	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	101				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	117				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	83				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65				24-159

Matrix Spike Analysis**Batch Quality Control****Project Name:** CAPE COD GATEWAY AIRPORT**Project Number:** Not Specified**Lab Number:** L2148623**Report Date:** 09/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545564-3 QC Sample: - Client ID: -												
Perfluorobutanoic Acid (PFBA)	ND	4.58	4.45	97		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	4.58	4.32	93		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.07	3.95	97		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	4.29	4.34	101		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	4.58	4.51	97		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	4.31	4.28	99		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	4.58	4.53	97		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	4.19	4.43	96		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	4.58	4.62	99		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	4.36	4.79	110		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	4.36	4.01	92		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	4.58	4.53	96		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	4.25	4.48	102		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	4.58	4.28	93		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	4.4	4.89	111		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	4.41	4.04	92		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	4.58	4.50F	98		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	4.58	4.70	99		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	4.42	3.89	88		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	4.58	4.37	95		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	4.58	3.54	77		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	4.58	4.51	98		-	-		69-135	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2148623

Report Date: 09/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545564-3 QC Sample: - Client ID: -												
Perfluorotridecanoic Acid (PFTrDA)	ND	4.58	5.33	116		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	4.58	4.38	96		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101				20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	22	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	21	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65				24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	61				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	60				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				74-139

Lab Duplicate Analysis Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2148623

Report Date: 09/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545564-4 QC Sample: L2148623-02 Client ID: HW-X(M) 7-9						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	0.139JB	0.114JF	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545564-4 QC Sample: L2148623-02 Client ID: HW-X(M) 7-9						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		60	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	62		57	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		72	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65		62		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		63	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68	Q	61	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76	Q	71	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68	Q	62	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	73		64		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70	Q	62	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78	Q	74	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	69	Q	63	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		65		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	3	Q	4	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		62		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	76		44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	5	Q	4	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		54		54-150

Lab Duplicate Analysis **Batch Quality Control**

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2148623

Report Date: 09/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545564-4 QC Sample: L2148623-02 Client ID: HW-X(M) 7-9						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	31		29		24-159

INORGANICS & MISCELLANEOUS

Project Name: CAPE COD GATEWAY AIRPORT**Project Number:** Not Specified**Lab Number:** L2148623**Report Date:** 09/19/21**SAMPLE RESULTS****Lab ID:** L2148623-02**Client ID:** HW-X(M) 7-9**Sample Location:** HYANNIS**Date Collected:** 09/07/21 09:15**Date Received:** 09/09/21**Field Prep:** Not Specified**Sample Depth:****Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	97.2		%	0.100	0.100	1	-	09/10/21 15:05	121,2540G	NG



Project Name: CAPE COD GATEWAY AIRPORT**Project Number:** Not Specified**Lab Duplicate Analysis***Batch Quality Control***Lab Number:** L2148623**Report Date:** 09/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1545091-1 QC Sample: L2147340-11 Client ID: DUP Sample						
Solids, Total	41.1	39.5	%	4		10

Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2148623-01A	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		-
L2148623-01B	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		-
L2148623-02A	Plastic 8oz unpreserved	A	NA		3.0	Y	Absent		A2-537-ISOTOPE(14)
L2148623-02B	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		A2-TS(7)

Project Name: CAPE COD GATEWAY AIRPORT
Project Number:

Serial_No:09192120:38
Lab Number: L2148623
Report Date: 09/19/21

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTTrDA	72629-94-8
Perfluorododecanoic Acid	PFDaA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDaDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
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

Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21**Footnotes**

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: CAPE COD GATEWAY AIRPORT**Lab Number:** L2148623**Project Number:** Not Specified**Report Date:** 09/19/21**Data Qualifiers**

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2148623
Report Date: 09/19/21

REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.

ID No.:17873

Facility: **Company-wide**

Revision 19

Department: **Quality Assurance**

Published Date: 4/2/2021 1:14:23 PM

Title: **Certificate/Approval Program Summary**

Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene**EPA 625/625.1:** alpha-Terpineol**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.**Mansfield Facility****SM 2540D:** TSS**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:**Drinking Water****EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,****EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B****EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.****Non-Potable Water****SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,****SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.**EPA 624.1:** Volatile Halocarbons & Aromatics,**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

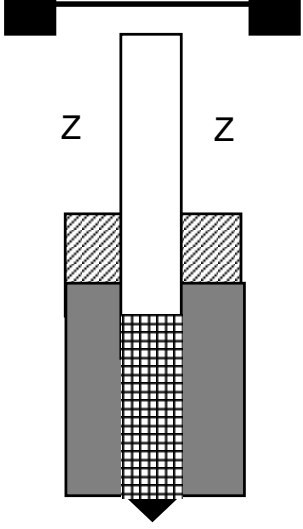






Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.****Mansfield Facility:****Drinking Water****EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.****EPA 522, EPA 537.1.****Non-Potable Water****EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.**EPA 245.1 Hg.****SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

APPENDIX B

Recent Monitoring Well/Soil Boring Logs

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.		Project Horsley Witten Group Barnstable, 480 Barnstable Road Hyannis, MA		Boring No. HW-U(s) Sheet 1 of 1		
Driller: Tommy Desmond Helper: Sean Morgan Inspector: Sarah Bartlett		Boring location: Wendy's Ground Surface Elevation: Date start: 4/5/2021 Date end: 4/8/2021				
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches		Notes:		Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x20' SCH40 PVC FJT Screen Size: 2"x10'X.010 SCH40 PVC FJT		
Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
2					F-M-C brown sand. Drilled with hollow stem augers to 30' and set well as directed.	 <p> <i>Not to scale</i> Well Depth: 28.8' Static: 23.69' Well screen: 18.8' to 28.8' Native: 0' to 13' Bentonite grout: n/a Bentonite seal: 13' to 16' Sand pack: 16' to 28.8' End of boring: 30' End of sample: n/a </p>
0			0 - 30			
-2						
-4						
-6						
-8						
-10						
-12						
-14						
-16						
-18						
-20						
-22						
-24						
-26						
-28						
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						
-52						
-54						
-56						
-58						
-60						
-62						
-64						
-66						
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key  - CONCRETE  - SAND PACK  - SOIL BACKFILL  - BENTONITE  - SCREEN  - APPROX. WATER LEVEL	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	Trace 0 - 10%		
0 - 4	V. LOOSE	> 2	V. SOFT	Little 10 - 20%		
4 - 10	LOOSE	2 - 4	SOFT	Some 20 - 35%		
10 - 30	M. DENSE	4 - 8	M. STIFF	And 35 - 50%		
30 - 50	DENSE	8 - 15	STIFF			
> 50	V. DENSE	15 - 30	V. STIFF			
		> 30	HARD			
CAPE COD TEST BORING				BORING NO. HW-U(s)		

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.		Project Horsley Witten Group Barnstable, 480 Barnstable Road Hyannis, MA		Boring No. HW-U(M) Sheet 1 of 1		
Driller: Tommy Desmond Helper: Sean Morgan Inspector: Sarah Bartlett			Boring location: Wendy's Ground Surface Elevation: Date start: 4/5/2021 Date end: 4/8/2021			
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches		Notes:		Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x35' SCH40 PVC FJT Screen Size: 2"x5' X.010 SCH40 PVC FJT		
Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
2					F-M-C brown sand. Drilled with hollow stem augers to 40' and set well as directed.	
0			0 - 40			
-2						
-4						
-6						
-8						
-10						
-12						
-14						
-16						
-18						
-20						
-22						
-24						
-26						
-28						
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						
-52						
-54						
-56						
-58						
-60						
-62						
-64						
-66						
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key - CONCRETE - SAND PACK - SOIL BACKFILL - BENTONITE - SCREEN - APPROX. WATER LEVEL	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	Trace 0 - 10%		
0 - 4	V. LOOSE	> 2	V. SOFT	Little 10 - 20%		
4 - 10	LOOSE	2 - 4	SOFT	Some 20 - 35%		
10 - 30	M. DENSE	4 - 8	M. STIFF	And 35 - 50%		
30 - 50	DENSE	8 - 15	STIFF			
> 50	V. DENSE	15 - 30	V. STIFF			
		> 30	HARD			
CAPE COD TEST BORING				BORING NO. HW-U(m)		

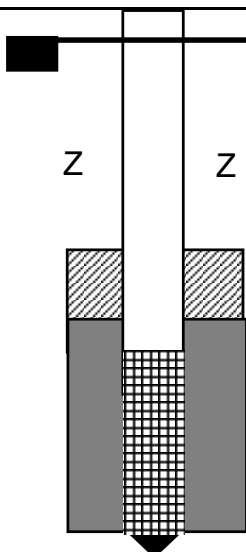






Not to scale
 Well Depth: 38.93'
 Static: 23.61'
 Well screen: 18.61' to 23.61'
 Native: 0' to 2'
 Bentonite grout: 2' to 25'
 Bentonite seal: 25' to 28.93'
 Sand pack: 28.93' to 38.93'
 End of boring: 40'
 End of sample: n/a

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.		Project Horsley Witten Group Barnstable, 480 Barnstable Road Hyannis, MA		Boring No. HW-W(M) <hr/> Sheet 1 of 1		
Driller: Tommy Desmond Helper: Sean Morgan Inspector: Sarah Bartlett			Boring location: Watershed area Ground Surface Elevation: Date start: 4/5/2021 Date end: 4/8/2021			
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches		Notes:		Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x45' SCH40 PVC FJT Screen Size: 2"x5' X.010 SCH40 PVC FJT		
Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
2					F-M-C brown sand. Drilled with hollow stem augers to 50' and set well as directed.	
0			0 - 50			
-2						
-4						
-6						
-8						
-10						
-12						
-14						
-16						
-18						
-20						
-22						
-24						
-26						
-28						
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						
-52						
-54						
-56						
-58						
-60						
-62						
-64						
-66						
Granular Soils		Cohesive Soils		Proportions Used		Well Installation Key - CONCRETE - SAND PACK - SOIL BACKFILL - BENTONITE - SCREEN - APPROX. WATER LEVEL
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%		
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%		
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%		
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%		
> 50	V. DENSE	15 - 30	V. STIFF			
				> 30	HARD	
CAPE COD TEST BORING						BORING NO. HW-W(M)

Not to scale
 Well Depth: 52.01'
 Static: 28.90'
 Well screen: 47.01' to 52.01'
 Native: 0' to 5'
 Bentonite grout: 5' to 39'
 Bentonite seal: 39' to 42'
 Sand pack: 42' to 52.01'
 End of boring: 50'
 End of sample: n/a

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.		Project Horsley Witten Group Barnstable, 480 Barnstable Road Hyannis, MA		Boring No. HW-W(D) Sheet 1 of 1		
Driller: Tommy Desmond Helper: Sean Morgan Inspector: Sarah Bartlett			Boring location: Watershed area Ground Surface Elevation: Date start: 4/5/2021 Date end: 4/8/2021			
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches		Notes:		Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x55' SCH40 PVC FJT Screen Size: 2"x5' X.010 SCH40 PVC FJT		
Depth	Sample				Sample Description	Well Installation
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"		
2					F-M-C brown sand. Drilled with hollow stem augers to 60' and set well as directed.	
0			0 - 60			
-2						
-4						
-6						
-8						
-10						
-12						
-14						
-16						
-18						
-20						
-22						
-24						
-26						
-28						
-30						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						
-52						
-54						
-56						
-58						
-60						
-62						
-64						
-66						
Granular Soils		Cohesive Soils		Proportions Used	Well Installation Key - CONCRETE - SAND PACK - SOIL BACKFILL - BENTONITE - SCREEN - APPROX. WATER LEVEL	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10% Little 10 - 20% Some 20 - 35% And 35 - 50%		
4 - 10	LOOSE	2 - 4	SOFT			
10 - 30	M. DENSE	4 - 8	M. STIFF			
30 - 50	DENSE	8 - 15	STIFF			
> 50	V. DENSE	15 - 30	V. STIFF			
		> 30		HARD		
CAPE COD TEST BORING					BORING NO. HW-W(D)	

Not to scale
 Well Depth: 61.77'
 Static: 28.67'
 Well screen: 56.77' to 61.77'
 Native: 0' to 5'
 Bentonite grout: 5' to 48'
 Bentonite seal: 48' to 51'
 Sand pack: 51' to 56.77'
 End of boring: 60'
 End of sample: n/a

Cape Cod Test Boring 5 Rayber Road, Orleans, MA 02653 (508) 240-1000 div. Desmond Well Drilling, Inc.			Project Horsley Witten Group Barnstable, 480 Barnstable Road Hyannis, MA			Boring No. HW-W(DD)		
						Sheet 1 of 1		
Driller: Tommy Desmond			Boring location: Watershed area					
Helper: Sean Morgan			Ground Surface Elevation:					
Inspector: Sarah Bartlett			Date start: 4/5/2021			Date end: 4/8/2021		
Sampler consists of a two inch split spoon driven using a 140 lb. hammer falling thirty inches			Notes:			Auger Size: 6 1/4" x 4" H.S.A Casing Size: 2"x67' SCH40 PVC FJT Screen Size: 2"x5'X.010 SCH40 PVC FJT		
Depth	Sample				Sample Description		Well Installation	
(FT)	NO	PEN/REC	DEPTH/FT	BLOWS 6"				
2					F-M-C brown sand; trace gravel. Dry.			
0								
-2					F-M brown sand. Dry.		Z	
-4	1	24/19	3 - 5	7-8-8-14				
-6					F-M-C brown sand; little gravel. Dry.		Z	
-8	2	24/16	8 - 10	2-5-7-7				
-10					F-M-C brown sand; some gravel. Dry.			
-12								
-14	3	24/8	13 - 15	4-4-8-7	F-M brown sand. Dry.			
-16								
-18	4	24/13	18 - 20	3-5-7-9	F-M-C brown sand. Wet.			
-20								
-22					F-M-C brown sand. Wet.			
-24	5	24/16	23 - 25	4-5-6-4				
-26					F-M-C brown sand. Wet.			
-28	6	24/10	28 - 30	1-4-4-6				
-30					F-M-C brown sand; M-C brown sand. Wet.		Not to scale Well Depth: 72.05' Static: 28.59'	
-32								
-34	7	24/12	33 - 35	2-3-3-4	F-M brown sand; M-C brown sand; some gravel. Wet.		Well screen: 67.05' to 72.05' Native: 0' to 5'	
-36								
-38	8	DHH	38 - 40	DHH	F-M-C brown sand. Wet.		Bentonite grout: 5' to 59' Bentonite seal: 59' to 62' Sand pack: 62' to 72.05'	
-40								
-42					F-M brown sand. Wet.		End of boring: 70'	
-44	9	DHH	43 - 45	DHH				
-46					No sample. Set well.		End of sample: 70'	
-48	10	DHH	48 - 50	DHH				
-50					F-M-C brown sand. Wet.			
-52								
-54	11	DHH	53 - 55	DHH	F-M-C brown sand. Wet.			
-56								
-58	12	DHH	58 - 60	DHH	F-M brown sand. Wet.			
-60								
-62					F-M brown sand. Wet.			
-64	13	DHH	63 - 65	DHH				
-66	14	DHH	68 - 70	DHH	No sample. Set well.			
Granular Soils		Cohesive Soils		Proportions Used		Well Installation Key		
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY			 - CONCRETE		
0 - 4	V. LOOSE	> 2	V. SOFT	Trace 0 - 10%		 - SAND PACK		
4 - 10	LOOSE	2 - 4	SOFT	Little 10 - 20%		 - SOIL BACKFILL		
10 - 30	M. DENSE	4 - 8	M. STIFF	Some 20 - 35%		 - BENTONITE		
30 - 50	DENSE	8 - 15	STIFF	And 35 - 50%		 - SCREEN		
> 50	V. DENSE	15 - 30	V. STIFF			 - APPROX. WATER LEVEL		
CAPE COD TEST BORING						BORING NO. HW-W(DD)		

Horsley Witten Group

Sustainable Environmental Solutions

90 Route 6A • Sandwich, MA • 02563
Tel: 508-833-6600 • Fax: 508-833-3150 • www.horsleywitten.com



BORING LOG: HW-X(s)

Project: 21084

Client: Cape Cod Gateway Airport

Drilling Contractor: New England Geotech.

Drilling Equipment: Direct Push

Drilling Location: North Ramp, Adjacent to Former ARFFF/SRE Building

Date: 9/7/2021

Completion Depth: 30.00'

Elevation: N/A

Inspector: VA

Depth to Water: 24.80 BGS

Proportions	Color	USCS Code	Size	Misc.
trace (trc) 0 - 10%	Blue (Bl)	Well-Graded Gravel (GW)	Fine = (f)	Fragments (frag.)
little (li) 10 - 20%	Red (R)	Poorly-Graded Gravel (GP)	Medium = (m)	Cement (cem.)
some (so) 20 - 35%	Light (lt)	Silty Gravels, Gravel-Sand-Silt Mixtures (GM)	Coarse = (c)	Below Ground Surface (BGS)
and 35 - 50%	Dark (dk)	Clayey Gravels, Gravel-Sand-Clay Mixtures (GC)	Dark = (dk)	Total Organic Vapors (TOV)
	Rust (Ru)	Well-Graded Sand (SW)	Fine to Coarse = (f-c)	Parts per million (PPM)
	Brown (Br)	Poorly-Graded Sand (SP)	Very = (v)	Not Available (N/A)
	Orange (Or)	Silty Sands, Sand Silt Mixtures (SM)	More/Less = (+/-)	Depth to Water (DTW)
	Black (Blk)	Clayey Sands, Sand-Clay Mixtures (SC)		
	Angular	Inorganic Silts, Clayey Silts of Low to Medium Plasticity (ML)		
	Round (rnd.)	Inorganic Silts, Micaceous, or Diatomaceous Silty Soils, Elastic Silts (MH)		
	Angular (ang.)	Inorganic Clays of Low to Medium Plasticity, Gravely, Sandy, and Silty Clays (CL)		

Depth Feet	Description	TOV (PPM)	Recovery	USCS Code	Color	Comments	Well Details	Depth Feet
0-2	0-8" asphalt followed by dry, tan fine sand and gravel	<0.1	54/62	SP	lt			0-2' feet concrete collar and road box
2-4	Dry, tan fine sand and gravel	<0.1						
4-6	Dry, fine to medium tan sand with trace gravel	<0.1						
6-8	Dry, fine to medium tan sand with trace gravel	<0.1	62/62	SP	lt			
8-10	Dry, fine to medium tan sand with trace gravel	<0.1						
10-12	Dry, fine to medium tan sand with trace gravel	<0.1	62/62	SP	lt			Sand pack 2'-16'
12-14	Dry, fine to medium tan sand with trace gravel	<0.1						
14-16	Dry, fine to medium tan sand with trace gravel	<0.1	62/62	SP	lt			
16-18	Dry, fine to medium tan sand with trace gravel	<0.1						
18-20	Moist, fine to medium tan sand with trace gravel	<0.1	62/62	SP	lt			Bentonite pack 16'-18'
20-22	NA					Hole collapse at 20'. Hammer casing to 30' and set well.		
22-24	NA							
24-26	NA							
26-28	NA							
28-30	NA							

DTW: 24.80'

2-inch 0.010 slot PVC screen
Screen Interval: 25'-30' BGS

Horsley Witten Group

Sustainable Environmental Solutions

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BORING LOG: HW-X(m)

Project: 21084

Client: Cape Cod Gateway Airport

Drilling Contractor: New England Geotech.

Drilling Equipment: Direct Push

Drilling Location: North Ramp, Adjacent to Former ARFFF/SRE Building

Date: 9/7/2021

Completion Depth: 37.00'

Elevation: N/A

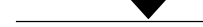
Inspector: VA

Depth to Water: 25.15 BGS

Proportions	Color	USCS Code	Size	Misc.
trace (trc) 0 - 10%	Blue (Bl)	Well-Graded Gravel (GW)	Fine = (f)	Fragments (frag.)
little (li) 10 - 20%	Red (R)	Poorly-Graded Gravel (GP)	Medium = (m)	Cement (cem.)
some (so) 20 - 35%	Light (lt)	Silty Gravels, Gravel-Sand-Silt Mixtures (GM)	Coarse = (c)	Below Ground Surface (BGS)
and 35 - 50%	Dark (dk)	Clayey Gravels, Gravel-Sand-Clay Mixtures (GC)	Dark = (dk)	Total Organic Vapors (TOV)
	Rust (Ru)	Well-Graded Sand (SW)	Fine to Coarse = (f-c)	Parts per million (PPM)
	Brown (Br)	Poorly-Graded Sand (SP)	Very = (v)	Not Available (N/A)
	Orange (Or)	Silty Sands, Sand Silt Mixtures (SM)	More/Less = (+/-)	Depth to Water (DTW)
	Black (Blk)	Clayey Sands, Sand-Clay Mixtures (SC)		
	Angular	Inorganic Silts, Clayey Silts of Low to Medium Plasticity (ML)		
	Round (rnd.)	Inorganic Silts, Micaceous, or Diatomaceous Silty Soils, Elastic Silts (MH)		
	Angular (ang.)	Inorganic Clays of Low to Medium Plasticity, Gravely, Sandy, and Silty Clays (CL)		

Depth Feet	Description	TOV (PPM)	Recovery	USCS Code	Color	Comments	Well Details	Depth Feet
0-2	NA					Installed adjacent to HW-X(s). 1.5" prepacked stainless steel screen with PVC Riser.		0-2' feet concrete collar and road box
2-4	NA							
4-6	NA							
6-8	NA							
8-10	NA							
10-12	NA							
12-14	NA							
14-16	NA							
16-18	NA							
18-20	NA							
20-22	NA							
22-24	NA							
24-26	NA							
26-28	NA							
28-30	NA							
30-32	NA							
32-34	NA							
34-36	NA							
36-37	NA							

DTW: 25.15'



1.5-inch 0.010 slot stainless steel screen
Screen Interval: 32'-37' BGS

Bentonite pack 28-30'

Sand pack 30'-37'