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GOVERNOR

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM  
COMMISSIONER

**MEMORANDUM**

July 19, 2022

The Maine Department of Environmental Protection (Department) is pleased to present the attached “Background Levels of PFAS and PAHs in Maine Shallow Soils, Study Report,” prepared by Sanborn, Head & Associates, Inc., dated April 2022 (PFAS Background Study). This memorandum provides preliminary guidance for applying the statistically derived values presented in the PFAS Background Study at environmental remediation sites. The use of this preliminary guidance may not be appropriate at other sites or in other instances. This guidance does not supersede rules, program-specific guidance documents, program-specific procedures, or standard operating procedures.

The Department intends to incorporate information contained in the PFAS Background Study into various guidance documents and rules, as applicable, as they are revised in the future. The PAH data contained in the study report will be added to previously obtained background PAH data and incorporated into a statewide background evaluation. Similarly, the PFAS data will be used to update current statewide background PFAS concentrations as applicable.

Table 9 of the PFAS Background Study presents recommended PFAS background statistics and includes multiple statistical solutions for the entire dataset. The statistical solutions include the 90% Upper Prediction Limit (UPL90), the 90% Upper Tolerance Limit with 95% coverage (UTL90-95), the 95% Upper Tolerance Limit with 95% coverage (UTL95-95), and the 95% Upper Confidence Level of the mean (UCL95). The different approaches for consideration of outliers associated with the above noted statistics are also presented in Table 9. These approaches were selected based on the different environmental conditions the statistics would represent.

Until the various guidance documents and rules are updated, as applicable, the Department will use the information contained in the PFAS Background Study to assist in making risk-based decisions and managing risks according to existing policies related to background soil concentrations. The table below (Table 1) outlines soil background concentrations for nine PFAS that the Department recommends considering when evaluating PFAS-impacted properties in Maine. These compounds had a 10% or greater detection frequency and were tested for statistical correlations. Caution is advised when applying the statistical solutions to parameters with a percentage of detection below 10%.

The Department recommends that the Interim Background Threshold Value (BTV) be used for comparison of discrete samples, and the Interim Upper Bound of the Mean be used for comparison of samples representing average soil concentrations (using composite or multi-increment methodologies to collect samples). With the exception of the PFOS non-urban BTV, all BTVs are based on the UTL95-95 statistic. The PFOS non-urban BTV is based on the UTL90-95 statistic as the data distribution (Q-Q Plot in Appendix F of PFAS Background Study)

## Background Soil Concentrations in Maine

suggests that the UTL95-95 statistic is not appropriate for that parameter. The Interim Upper Bound of the Mean is based on the UCL95 statistic.

When comparing environmental sample results to these statistically derived values, it should be noted that a sample concentration lower than an applicable Background Threshold Value does not necessarily demonstrate that there is no risk or that a risk does not need to be addressed at a remediation site. Please consult with the Department for recommendations on how to use the statistically derived values in Table 1. The Maine Remedial Action Guidelines for Contaminated Sites provides guidance on how the Department assesses risk contribution from background contaminants at remediation sites in Maine. For more information, please see <https://www.maine.gov/dep/spills/publications/guidance/rags/Maine-Remedial-Action-Guidelines-2021-05-01.pdf>. Users should also consult the Interstate Technology Regulatory Council for a more complete discussion of soil background statistics (<https://sbr-1.itrcweb.org/statistics/>).

Table 1 – Statistical Options for PFAS Soil Background Concentrations in Maine Shallow Soils

Chemical	Interim Background Threshold Value (BTV)					Interim Upper Bound of Mean			
	Potential Outliers Removed	UTL Potential Parametric Fits	UTL Statistical Method	UTL90-95 (ng/g)	UTL95-95 (ng/g)	Potential Outliers Removed	UCL Potential Parametric Fits	UCL Statistical Method	UCL95 (ng/g)
PFBA	No	Lognormal	Logged KM	—	<b>0.431</b>	No potential outliers	Lognormal	KM H-UCL	<b>0.137</b>
PFPeA	No	None	Nonparametric	—	<b>1.02</b>	Yes	None	KM (Chebyshev)	<b>0.098</b>
PFHxA	No	None	Nonparametric	—	<b>1.49</b>	Yes	None	KM (Chebyshev)	<b>0.219</b>
PFHpA	No	None	Nonparametric	—	<b>0.246</b>	Yes	None	Normal (t) KM	<b>0.085</b>
PFOA	No	None	Nonparametric	—	<b>2.18</b>	Yes	None	KM (Chebyshev)	<b>0.394</b>
PFNA	No	None	Nonparametric	—	<b>1.93</b>	Yes	Lognormal	KM H-UCL	<b>0.145</b>
PFDA (urban)	No	None	Nonparametric	—	<b>3.24</b>	Yes	Lognormal	KM H-UCL	<b>0.094</b>
PFDA (non-urban)	No	Normal; Gamma; Lognormal	Normal KM	—	<b>0.112</b>	No potential outliers	Normal; Gamma; Lognormal	Normal (t) KM	<b>0.078</b>
PFUnA	No	None	Nonparametric	—	<b>0.944</b>	Yes	Gamma; Lognormal	KM Approximate Gamma	<b>0.073</b>
PFOS (urban)	No	Gamma; Lognormal	Gamma KM	—	<b>3.036</b>	No potential outliers	Gamma; Lognormal	KM Adjusted Gamma	<b>1.17</b>
PFOS (non-urban)	No	None	Nonparametric	<b>0.551</b>	—	Yes	Normal; Gamma; Lognormal	Normal (t) KM	<b>0.275</b>

Notes:

Modified from Table 9, Sanborn Head, April 2022, Background Levels of PFAS and PAHS in Maine Shallow Soils Study Report.

ng/g = nanogram analyte per gram of soil	UTL90-95 = 90% Upper Tolerance Limit with 95% Coverage
UTL95-95 = 95% Upper Tolerance Limit with 95% Coverage	UCL95 = 95% Upper Confidence Limit of the Mean
KM = Kaplan-Meier method for handling non-detect data	HW = Hawkins-Wixley approximation for gamma distribution
WH = Wilson-Hilferty approximation for gamma distribution	H-UCL = UCL calculation based on Land's H-statistic for lognormal data
Chebyshev = UCL calculation based on Chebyshev inequality	Normal (t) = UCL calculation based on Student's t-distribution critical value
Nonparametric Statistics are calculated from Higher Order Statistics (See ProUCL Version 5.1 Technical Guide Chapters 4 and 5)	

Troy Smith, LG  
Maine Department of Environmental Protection  
Bureau of Remediation and Waste Management

May 2, 2022  
File No. 5060.00

Re: Background Levels of PFAS and PAHs In Maine Shallow Soils

Dear Mr. Smith:

Sanborn Head is pleased to provide this report for the study of background levels of per- and polyfluorinated substances (PFAS) and polycyclic aromatic hydrocarbons (PAHs) in shallow soils in Maine. This study was only possible with the support of the Maine Department of Environmental Protection, and we greatly appreciate the significant contributions by you and your colleagues in obtaining access permissions, collecting samples for many locations, and providing technical review and comment.


We also acknowledge the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Transportation, and the Maine Department of Agriculture, Conservation, and Forestry – Bureau of Parks and Lands, as well as numerous municipal officials and non-profit entities, for their important contributions during site selection and coordinating access to the sampling locations.

Thank you for the opportunity to work with you on this important project. Should you have any questions, please do not hesitate to contact us

Very truly yours,  
SANBORN, HEAD & ASSOCIATES, INC.



Harrison Roakes  
*Project Manager*



Stephen Zemba, PhD  
*Project Director*

HRR/SGZ: hrr

Encl. Study Report

cc: Maine DEP Background Soils Working Group  
Nicholas Hodgkins, Maine DEP  
Andrew Newcomb, Maine DEP

**BACKGROUND LEVELS OF PFAS AND PAHS  
IN MAINE SHALLOW SOILS  
STUDY REPORT**

*Prepared for The Maine Department of Environmental Protection  
File No. 5060.00  
April 2022*

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## 1.0 INTRODUCTION

Sanborn, Head & Associates (Sanborn Head) prepared this report for the study of background levels of per- and polyfluoroalkyl substances (PFAS) and polycyclic aromatic hydrocarbons (PAHs) in Maine shallow soils (the Study Report). The Study Report was prepared pursuant to our services agreement with the Maine Department of Environmental Protection (Maine DEP), dated September 15, 2021. The Study Report and the services provided are subject to the Limitations provided in Section 8.

## 2.0 PROBLEM DEFINITION AND PROJECT DESCRIPTION

The purpose of this study was to collect soil samples and to quantify background concentrations of PFAS in Maine shallow soils. In the Maine DEP Remedial Action Guidelines (RAGs) for Sites Contaminated with Hazardous Substances, the following definitions are provided for use in context of a given Hazardous Substance Site:<sup>1</sup>

*“Background Contaminants” means those contaminants that are not due to the release of contaminants at the Hazardous Substance Site. The background contaminants may be naturally occurring in the environment (e.g., arsenic) or man-made (e.g., DDT).*

*“Background Locations” means areas with relevant media (e.g., soil, groundwater, air) that are similar to the Hazardous Substance Site (i.e., media with similar physical characteristics), that have been influenced to the same degree by regional deposition, runoff, or other contaminant inputs, but where contaminants released at the Hazardous Substance Site have not come to be located. Some chemicals may be present in background locations because of both natural and man-made conditions (such as naturally occurring arsenic and arsenic from pesticide applications or mining operations).*

To be consistent with the background determinations in the RAGs, the background study included an attempt to quantify background concentrations separately for urban and non-urban soils to determine if there were differences in PFAS concentrations. The distinction between urban and rural areas is primarily based on the Maine Department of Transportation (DOT) delineation of Urban Compact Areas. In counties that do not have designated urban compact areas, the rural (non-urban) designation are assumed for rural farming and low-density housing areas and the urban designation is assumed for developed communities with higher density development.

This study considers potential correlations between PFAS, PAHs, and other soil parameters. The sampling methodology was adapted from the PFAS Background in Vermont Shallow

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<sup>1</sup> “Maine Remedial Action Guidelines for Sites Contaminated with Hazardous Substances”, by the Maine DEP, effective May 1, 2021.



Soils (the Vermont Study).<sup>2</sup> The soil samples were collected by Sanborn Head and Maine DEP personnel. The samples were provided to Alpha Analytical Laboratories, Inc. (Alpha) and the University of Maine Soil Testing Service (UMaine Soil Laboratory) for laboratory analysis.

### **3.0 DATA QUALITY OBJECTIVES**

#### **3.1 Conceptual Model**

Background levels of PFAS have been detected in soils, including shallow soils analyzed as part of the Vermont Study. Our working conceptual model for background levels of PFAS in soil was that PFAS were emitted from regional or distant sources and were transported via the atmosphere. Over time, PFAS deposited to and accumulated within soils. Similarly, background levels of PAHs from atmospheric sources are also present in many soils. The topographical and hydrogeologic setting, weather patterns, soil properties, contaminant properties, and breakdown of precursor or target analytes are some factors that may affect background concentrations of PFAS and PAHs in soils.

#### **3.2 Study Boundaries**

Samples were collected from locations in Maine with no known PFAS releases or suspected influence of significant PFAS emissions from distinctly identifiable nearby sources. Properties and sample locations were screened so that samples are anticipated to represent background soils, with half of the samples being collected from urban settings and half collected from non-urban settings (as defined in Section 4.1). As requested by the Maine DEP, this study was limited to sampling shallow soils using methods consistent with the Vermont Study.

#### **3.3 Key Objectives**

The key objectives for this study are to:

- Establish background datasets for PFAS, including determining if there was a significant difference in background levels of PFAS between Maine shallow soils in urban versus non-urban settings;
- Calculate background statistics for PFAS in Maine shallow soils (either for soils overall, or if there are significant differences, then for urban and non-urban settings separately); and
- Determine if there are significant correlations between PFAS, PAHs, and soil parameters included in this study.

The Maine DEP may incorporate these background datasets or statistics into regulatory decisions. While these background datasets and statistics may be used for State-wide background, the scope of the sampling was limited to shallow soils collected from the locations included in this study. The use of site-specific background data may be useful in

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<sup>2</sup> "PFAS Background in Vermont Shallow Soils", prepared by the University of Vermont and Sanborn Head, published by the Vermont Department of Environmental Conservation. <https://anrweb.vt.gov/PubDocs/DEC/PFOA/Soil-Background/PFAS-Background-Vermont-Shallow-Soils-03-24-19.pdf>

characterizing representative conditions local to a Hazardous Substance Site or other area of interest.

## **4.0 SAMPLING AND ANALYSIS**

### **4.1 Sample Location Selection**

Sample locations are summarized in Table 1 and shown on Figure 1. Sixty-four (64) sample locations were selected across the 16 Maine counties, with 4 locations per county. Sample coverage was evenly divided amongst designated urban and non-urban settings, with 32 samples in each category. Urban settings were defined as areas formally designated as “Urban Compact” by the Maine DOT or “Urbanized Area” by the US Census Bureau. For counties where an urban sampling location was not available based on the Maine DOT or US Census Bureau criteria, a sample location in the most population-dense city in the county was selected as a representative urban sample. At least one urban and one non-urban sample location were selected for each county.

Details of the sample location selection process are provided in Appendix A. The sample location selection process used a Graphical Information System (GIS) approach to screen potential sampling locations for accessibility and suspected nearby potential contaminant point sources. Exceptions to the selection criteria are noted in Table 1, and they include several locations that were selected despite being within the specified buffer range for documented Underground Storage Tanks (USTs) or remediation sites. Those exceptions were typically made to meet the need for including urban locations; in data quality assessment and statistical analyses, these screening criteria exceptions were not identified as affecting the usability of the data.

### **4.2 Soil Sampling Methods**

Soil samples were collected according to the methods described in Appendix B. Consistent with the sampling methodology for the Vermont Study and with many typical sampling approaches for characterization of PFAS and PAHs in soil, discrete grab samples were collected from a specific depth interval (i.e., 0 to 6 inches for this study) for laboratory analysis. Prior to collecting the sample, the location was cleared of any surface debris and leaf litter. If grass or vegetation was present, then the sod and surficial soil consisting primarily of organic litter or root matter were removed prior to sampling.

Soil samples were classified and logged on-site using a modified Burmister Soil Classification System. The shallow soil samples were collected using freshly gloved hands or a stainless-steel scoop. For some locations, a steel spade was used to aid in cutting turf and loosening soil. As described in Appendix B, PFAS sampling protocol were implemented to reduce the potential for contamination or cross-contamination during sampling.

The soil sampling field forms are provided in Appendix C.

### **4.3 Field QA/QC Sampling**

Quality assurance and quality control (QA/QC) samples were collected and analyzed to provide information on the variability and usability of the sample results. The following

exhibit provides a summary of QA/QC samples that were collected in the field and analyzed by the laboratory. Associated equipment rinsate blank and field blank samples were collected at the same time and location. Laboratory-provided, PFAS-free water was used for collection of the equipment rinsate blank and the field blank.

QA/QC Sample Types	Analytical	Frequency <sup>1</sup>	Description
Field Duplicate	PFAS, PAHs, and soil parameters	1 per 20 field samples.	Primary sample and the field duplicate sample were collected from well-mixed soil from the same stainless-steel bowl or resealable plastic bag of soil.
Equipment Rinsate Blank	PFAS and PAHs	1 per 20 field samples, and at least 1 per field team.	Collected by pouring an aliquot of PFAS-free water over the sampling equipment and collecting the rinsate in a sampling container.
Field Blank	PFAS only	1 per 20 field samples.	Collected at a sampling location by pouring an aliquot of PFAS-free water into a sampling container.
Trip Blank	PFAS only	1 per chain-of-custody, per cooler.	Prepared prior to the sampling event using PFAS-free water.

Note:

1. Except for trip blanks, which were based on chain-of-custody, four QA/QC samples were collected based on the 64 samples.

#### 4.4 Analytical Methods

Samples were submitted to Alpha, a Maine-accredited laboratory, for analysis for the following parameters. Analytical laboratory data reports are provided in Appendix D.

- Twenty-eight (28) target PFAS by Modified USEPA Method 537.1 using isotope dilution and liquid chromatography with tandem mass spectrometry (LC-MS/MS). The PFAS analytical list, including target method detection limits (MDLs), target reporting limits (RLs), and laboratory quality control criteria are provided in Table 2, which was based on information provided by Alpha. Detections between the MDL and the RL were reported as estimated values (J qualified).
- Nineteen (19) target PAHs by USEPA Method 8270D. The PAHs analytical list, including target MDLs, target RLs, and laboratory quality control criteria are provided in Table 3, which was based on information provided by Alpha. Detections between the MDL and the RL were reported as estimated values (J qualified).
- Total organic carbon (TOC) by the Lloyd Kahn Method using laboratory standard RLs and quality control criteria.

Samples were also submitted to the UMaine Soil Laboratory for analysis using standardized methodology typical for assessing agricultural soils for fertility. The parameters analyzed by the UMaine Soil Laboratory are described below, and analytical laboratory data reports are provided in Appendix D. All of the UMaine Soil Laboratory analyses were performed on the “less than two-millimeter fraction” of the soil samples.

- Ten (10) metals and sulfur by inductively coupled plasma - optical emission spectrometry (ICP-OES). Effective cation exchange capacity was calculated as the sum of milliequivalent levels of calcium, potassium, magnesium, sodium, and acidity, with adjustment at higher pH.
- Phosphorus by flow injection analysis (colorimetric).
- Soil pH with a pH probe using distilled water and Mehlich lime buffer.
- Organic matter by loss on ignition at 375 degrees Celsius.
- Particle size distribution of the “less than two-millimeter fraction” by hydrometer and wet sieving. The U.S. Department of Agriculture soil texture class was provided based on the particle size distribution.

The UMaine Soil Laboratory results provide quantitative information for characterizing soil types and potentially drawing correlations with PFAS concentrations. However, these data were not produced using USEPA methods for analysis of solid wastes or environmental media in the context of contaminated site characterization or risk assessment. Care should be taken in comparing these results against regulatory values or other risk-based screening criteria that are based on different analytical methods.

Sample containers were also stored at -20 degrees Celsius at Maine DEP facilities for later analysis. After an initial review of the target PFAS results, select samples in cold storage were submitted for further analysis of PFAS with Synthetic Precipitation Leaching Procedure (SPLP, USEPA Method 1312) and with Total Oxidizable Precursor Assay (TOP Assay). The SPLP analyses were performed by Alpha, and they modified the SPLP method to use materials acceptable for PFAS analysis. TOP Assay analyses were performed by Eurofins Lancaster Laboratories (Eurofins) of Lancaster, Pennsylvania. The sample selection criteria, laboratory analytical reports, tabulated results, and discussion are provided in Appendix E.

## **5.0 DATA QUALITY ASSESSMENT AND USABILITY FINDINGS**

Documentation of the data quality assessment, including limitations on the way in which the data should be used, is provided below. A formal data validation was not included in this study. The qualifiers assigned to the data during the data quality assessment are indicated with the results summarized in Table 4 – PFAS in Soil, Table 5 – PAHs in Soil, and Table 6 – Soil Parameters. Field duplicate and field QA/QC blank results are summarized in Table 7, and a summary of the data quality assessment findings is provided as Table 8.

As stated in Section 3.3, the objectives of this study are to 1) Establish background datasets for PFAS, including determining if there was a significant difference in background levels of PFAS between Maine shallow soils in urban versus non-urban settings; 2) Calculate background statistics for PFAS in Maine shallow soils (either for soils overall, or if there are significant differences, then for urban and non-urban settings separately); and 3) Determine if there are significant correlations between PFAS, PAHs, and soil parameters included in this study. This study used standard sample collection and analysis procedures, as described

above and as described in the Study Report Appendices, so that the data are of a known and acceptable quality.

## 5.1 Data Evaluation Actions

The data quality assessment completed by Sanborn Head identified some results that needed to be qualified based on review of field and laboratory QA/QC information. The following qualifiers were assigned to some data.

- "B" indicates the compound was present in the associated laboratory method blank or field QC blank.
- "F" indicates the ion transition ratio was outside the acceptance criteria and the concentration should be considered an estimated maximum concentration.
- "I" indicates the percent recovery in the MS/MSD was outside acceptance criteria.
- "J" indicates the result was considered estimated because of Data Quality Assessment actions (see Table 8) or the concentration was below the quantitation limit (RL) but above the Method Detection Limit (MDL).
- "J-" indicates the result was considered estimated with potential low bias due to low surrogate recovery or low laboratory control sample (LCS/D) recovery.

None of the data were rejected by the review completed by Sanborn Head, and the data were considered usable at the reported or estimated concentrations for the purposes of this study. Appendix G provides details of the data quality review completed by Maine DEP. The Maine DEP used a tighter threshold for rejecting data based on surrogate and internal standard recoveries when evaluating data. Several individual PFAS results were rejected by DEP, however, none of the rejections affected the statistical analysis of the data.

### 5.1.1 Field Duplicates

Field duplicate sample results were compared to the primary sample results. Duplicate pairs were compared by calculating the absolute relative percent difference (RPD) between the two results. The following criteria were used to apply qualifiers to the data.

Sample Results	Detect in both samples of the pair at $\geq 2x$ RL		Detects $< 2x$ RL and/or NDs
RPD	$RPD \leq 50\%$	$RPD > 50\%$	Not calculated
Detects	Accept as reported	J	Accept as reported
Non-Detects	-	-	Accept as reported

Notes:

1. "RPD" is the absolute relative percent difference.  
 "RL" indicates laboratory reporting limit (sample-specific for solid matrices).  
 "ND" indicates not detected.  
 "J" indicates an estimated value.  
 "-" indicates not applicable.
2. Actions were applied to the affected analyte(s) in the primary/duplicate pair.

One PFAS result for one sample was qualified due to an RPD exceeding 50 percent. Although they were not used for qualifying data, PFAS RPDs were typically less than 50 percent in instances where detections were less than two-times the RL.

### 5.1.2 Other Field QA/QC

Field QA/QC actions were applied to field samples as follows.

Sample Type	Actionable Data Type	Action
% Solids for Solid Matrices	10% ≤ %Solid < 30%	All results associated with the sample were considered estimated (J qualified).
	< 10% Solids	All results associated with the sample were considered unusable and rejected (R qualified). This qualifier was not used as all samples had greater than 10% solids.
Equipment Rinsate Blank Samples	Any compound detected in an equipment rinsate blank.	Results were considered estimated (J qualified) if detected in a primary sample collected in the associated batch of samples.
Field Blank	Any compound detected in a field blank.	Results were considered estimated (J qualified) if detected in the primary sample collected in the associated batch of samples.
Trip Blank Samples	Any compound detected in a trip blank.	Results were considered estimated (J qualified) if detected in the primary sample which accompanied that trip blank.

### 5.1.3 Laboratory QA/QC

QA/QC actions were applied based on laboratory-specified acceptance criteria, as follows. Laboratory acceptance limits for PFAS and PAHs are indicated in Tables 2 and 3, respectively. Other acceptance limits are indicated on the Alpha analytical laboratory data reports in Appendix D. Laboratory acceptance limits were not reviewed for the UMaine Soil Laboratory data.

Sample Type	Actionable Data Type	Action
Surrogate Recoveries	Results for any sample for which the surrogate recoveries were outside the laboratory's acceptance limits.	Results were considered estimated (J qualified).
Laboratory Method Blank Samples	Any compounds detected in a method blank (i.e., greater than the method detection limit or greater than the reporting limit).	Detected results for related samples/analytes were considered estimated (J qualified).
LCSs	Any compound for which the percent recovery was outside the laboratory's acceptance limits.	Results were considered estimated (J qualified) in the associated field samples.
	If the RPD was greater than the laboratory's acceptance limits.	

## 5.2 Data Usability Findings

The data were considered usable for this study based on the following criteria.

- Sample locations were selected using the methods described in Appendix A;
- Samples were collected, handled, and preserved using the methods described in Appendix B and as documented in the field forms provided in Appendix C; and

- Specified analytical methods were used as documented in the text of this Study Report, as specified in Tables 2 and 3, and as detailed in the laboratory analytical reports provided in Appendix D. Data were appropriately qualified using the procedures described in the section of the Study Report.

## 6.0 STATISTICAL ANALYSIS

The USEPA's ProUCL Version 5.1 software was used for statistical analyses. The ProUCL Version 5.1 Technical Guide (ProUCL Guidance) was the primary source for selection of statistical methodology.

### 6.1 Sample Size and Initial Outlier Screening

Samples were collected from 64 locations (i.e., 4 locations from 16 counties), which is similar to the 69 locations sampled in the Vermont Study. Half of the 64 Maine samples were collected from urban settings, and the other half were collected from non-urban settings. Only the primary field samples were included in the statistical analyses; field duplicate samples were only used for QA/QC.

During initial screening of the data, sample WL-02 was identified as an obvious outlier across numerous PFAS, including a detection of 113 ng/g perfluorooctanesulfonic acid (PFOS). Analysis of a field duplicate sample confirmed the elevated PFAS concentrations. Because the urban WL-02 sample was not considered representative of background, it was removed from this study data set prior to statistical analyses and later screening for potential outliers. Sample WL-02 was collected adjacent to a Maine DEP-licensed sludge land application site that was not digitally identified through GIS screening, and hence not recognized until after the background study sampling was completed.

The remaining 63 samples (31 urban and 32 non-urban) were considered for establishing the background datasets and were used in following statistical analyses. Based on the ProUCL Guidance recommendation of at least 10 observations for a background dataset, the sample sizes for this study were sufficient for calculating background statistics whether the data were partitioned by urban setting or not.

### 6.2 Potential Outlier Screening for PFAS

As described in the above discussion of sample size and initial outlier screening, WL-02 was identified as an obvious outlier across numerous PFAS. WL-02 was not considered representative of background and was removed from the dataset prior to this potential outlier screening.

The purpose of this formal outlier screening was to identify PFAS concentrations that may misrepresent the upper range of the dominant distribution of background concentrations. Including outliers in calculations of background statistics may result in elevated background statistics. As recommended by the ProUCL Guidance (Section 7.2), outlier screening was primarily performed on the data prior to any data transformation, although potential for data fitting with skewed distributions (e.g., log-transformation) was also considered.

Data were first visually screened for potential outliers by reviewing normal and lognormal quantile-quantile plots (Q-Q plots). The Q-Q plots are provided in Appendix F.<sup>3</sup> Q-Q plots were not prepared for PFAS with less than three detections. The PFAS distributions plotted on Figure 2 were used for potential outlier screening for those PFAS without Q-Q plots. The screening approach was based on methods described in the ProUCL Guidance Section 2.2.1.1, where potential outliers were visually identified as data points that resulted in a “jump or break” from a linear or smooth pattern on the normal Q-Q plot. If data points appeared to be consistent with a right-skew tail consisting of three or more samples or if data points fit well with the lognormal Q-Q plot, then those data were not considered potential outliers.

In total, fifteen (15) potential outliers across six (6) different samples, including AN-02, AN-03, CU-02, KE-01, OX-03, and PI-01, were identified for PFAS detections. Numerous elevated MDLs for non-detect results for sample AN-03 were also identified as potential outliers.

### 6.3 Comparison of PFAS in Urban and Non-Urban Settings

Comparison of urban and non-urban data were made using two-sample hypothesis approaches. Consistent with the ProUCL Guidance Section 6.9, nonparametric tests were selected to accommodate non-detect values and potential outliers. Two nonparametric tests were used: the Gehan Test and the Tarone-Ware (T-W) Test. The Gehan Test findings and the T-W Test findings were consistent for all the tested groups. Based on the two-sample hypothesis test results, the urban and non-urban data were different only for PFOS and perfluorodecanoic acid (PFDA). Urban and non-urban data were not different for the other PFAS at a significance level of 0.05.

The separate urban and non-urban background datasets for PFOS and PFDA were then evaluated for potential outliers using the approach described in Section 6.2.

### 6.4 Calculation of PFAS Background Statistics

The recommended background statistics are provided in Table 9. Background statistics based on datasets including potential outliers are provided in Table 10, and background statistics based on datasets with potential outliers removed are provided in Table 11. The background statistics tables also provide supplemental documentation of statistical methodology. For further details or discussion of statistical methods, the ProUCL Guidance should be consulted.<sup>4</sup>

Background statistics were calculated for combined urban and the non-urban datasets, except for PFOS and PFDA. For PFOS and PFDA, separate background statistics were calculated for the urban and the non-urban datasets. As suggested in the ProUCL Guidance

<sup>3</sup> Q-Q plots were produced using the “NADA:ros” function implemented in R. The function estimates quantile plotting positions using Regression on Order Statistics (ROS). Using ROS, non-detect data influence the plotting position of the detected data, but the non-detect data are not assigned a plotting position. Lopaka Lee (2017), NADA: Nondetects and Data Analysis for Environmental Data, R package version 1.6-1, <https://CRAN.R-project.org/package=NADA>; Helsel, D.R. (2012), Statistics for Censored Environmental Data Using Minitab and R, 2nd ed., Hoboken, New Jersey: John Wiley & Sons.

<sup>4</sup> [https://www.epa.gov/sites/default/files/2016-05/documents/proucl\\_5.1\\_tech-guide.pdf](https://www.epa.gov/sites/default/files/2016-05/documents/proucl_5.1_tech-guide.pdf)



Section 7.1, background statistics were calculated before and after removal of potential outliers to aid in evaluating the impact of potential outliers on the calculated statistics.

As specified by the Maine DEP, background levels of PFAS are summarized in this study by calculating the following statistics for each PFAS background dataset: 90% upper prediction limit (UPL90), 90% upper tolerance limit with 95% coverage (UTL90-95), 95% upper tolerance limit with 95% coverage (UTL95-95), and 95% upper confidence limit (UCL95) of the mean.<sup>5</sup> UPLs and UTLs may be used as background threshold values, where: the UPL90 is the upper limit for a single, future, independent sample from the sampled population at a 90% confidence level; the UTL90-95 is the 90% upper confidence limit on the 95<sup>th</sup> percentile of the sampled population; and the UTL95-95 is the 95% upper confidence limit on the 95<sup>th</sup> percentile of the sampled population.

The ProUCL software provides simultaneous calculation of background statistics assuming the data fit a normal distribution, a gamma distribution, and a lognormal distribution. Nonparametric background statistics were also calculated. In addition to calculation of the background statistics for each assumed distribution, the parametric fits for the data were assessed at a 0.05 significance level.

The UPL90, UTL90-95, and UTL95-95 background statistics were selected from the calculated values based on the following steps.

- 1) If the data did not appear to follow a parametric distribution, then nonparametric statistics were used.
- 2) If the data followed only a single parametric distribution, then the statistics from that parametric distribution were used.
- 3) If the data followed multiple parametric distributions, then the statistics were selected from the preferred parametric distribution: normal (most preferred), gamma (preferred), and lognormal (least preferred). These preferences were adapted from the recommendations provided in the ProUCL Guidance Section 5. The normal distribution is the typical default parametric assumption, and the ProUCL Guidance generally recommends the use of gamma distribution over lognormal distribution for the calculation of UPLs and UTLs.

Statistics based on Kaplan-Meier (KM) estimation methods were used for handling non-detect data. KM statistics were used because they are applicable for skewed data with multiple detection limits, and they do not rely on an assumption of parametric fit.

For UCL95 background statistics, the ProUCL software provides suggested UCLs based on the number of samples, the parametric fit, and skewness of the data. If a parametric-based

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<sup>5</sup> The Maine DEP RAGs for Sites Contaminated with Hazardous Substances specify using the UPL90 for determining background levels when site-specific sample sets are large enough for statistical analysis. The UCL95 was specified in the scope of work provided by the Maine DEP. The UTL90-95 was selected to have a consistent confidence with the 90% confidence from the UPL90 specification. The 95% coverage for the UTL is consistent with the more common UTL95-95.

UCL was suggested, then that parametric UCL was used. Like with the UPL90, UTL90-95, and UTL95-95 calculations, KM estimation methods were used for handling non-detect data.

For PFAS background datasets with a small number of detections, the following approaches were taken.

- If there were less than four detections, then the UCL95 was not calculated and nonparametric methods were selected for calculation of the UPL90, UTL90-95, and UTL95-95.
- If there was one detection at or above the greatest non-detect MDL, then the maximum detected value was used for the UPL90, UTL90-95, and UTL95-95.
- If there were no detections at or above the greatest non-detect MDL, then the maximum non-detect MDL was used for the UPL90, UTL90-95, and UTL95-95.

## 6.5 Selection of Recommended PFAS Background Statistics

The recommended PFAS background statistics were selected from either the background statistics without potential outliers removed or from the background statistics with potential outliers removed. The selected statistics, and whether potential outliers were included in their calculation or not, are provided in Table 9.

For datasets with one or more detections above the greatest non-detect MDL, the UPL90, UTL90-95, and UTL95-95 statistics were based on the background datasets without potential outliers removed. Although the potential outliers appeared to be relatively low-probability observations, the UPL90, UTL90-95, and UTL95-95 statistics that include the potential outliers were still considered representative of background soils because:

- 1) The dataset was already prescreened for obvious outliers, reducing the background datasets from 64 samples to 63 samples (or from 32 samples to 31 samples for PFOS and PFDA urban datasets).
- 2) Samples were collected from locations with no known PFAS releases or suspected influence of significant PFAS emissions from distinctly identifiable nearby sources.
- 3) The potential outliers were not associated with unusual sampling or analytical artifacts, except for elevated MDLs for sample AN-03. The MDLs for AN-03 were elevated because it had low percent solids (24.4%), and the sample was also highly organic.
- 4) Where detected background datasets were sufficiently large, parametric-based UPL and UTL statistics were relatively robust to the inclusion of potential outliers. Non-parametric statistics, especially UTLs, tended to be more sensitive to the inclusion of potential

outliers because they are based on the higher order statistics (i.e., the second highest value, in most cases).<sup>6</sup>

For PFAS where there were no detections above the elevated MDL for sample AN-03, the recommended UPL90, UTL90-95, and UTL95-95 statistics were based on the background dataset after removing AN-03 as a potential outlier.

The recommended UCL95 statistics were based on the background datasets with potential outliers removed. After removing potential outliers, the background data tended to have better parametric fits. Unlike the UPL90, UTL90-95, and UTL95-95 statistics, the UCL95 statistics tended to be more influenced by the potential outliers. Given this information, the UCL95 statistics calculated from the background dataset with potential outliers removed was more representative of the dominant distribution of background concentrations.

## 6.6 Correlation Testing

Analytes with a 10 percent detection frequency or greater were tested for correlations with PFAS. Nine (9) PFAS were included in the correlation tests, as well as the eighteen (18) detected PAHs and the twenty (20) quantified soil parameters, resulting in 378 analyte pairs tested for correlations. The test results are provided in Table 12.

Mann-Kendall (MK) analysis was used because it is a nonparametric correlation test that can accommodate non-detects in both tested datasets (i.e., x and y variables). Kendall's Tau correlation coefficients and p-values were calculated using the 'cenken' function from the R statistical package 'NADA: Nondetects and Data Analysis for Environmental Data', authored and maintained by Lopaka Lee. A significance level of 0.05 was used for evaluating p-values. The Kendall's Tau for each pair is provided in Table 12, and significant correlations are indicated with bold text and outline. Table 12 is also color-coded based on Kendall's Tau values.

Kendall's Tau is an indicator of nonparametric, monotonic trend (i.e., not necessarily linear). The value ranges from -1 to 1. A Kendall's Tau of 1 indicates a consistent positive correlation, a value of 0 indicates no correlation, and a value of -1 indicates a consistent negative correlation. In Table 12, correlations of the same PFAS (e.g., PFOS paired with PFOS) have Kendall's Tau less than 1 because of non-detects present in the dataset.

## 7.0 SUMMARY OF RESULTS

Discussion of the results is provided below. The results were based on the background dataset after removing the WL-02 outlier. The potential outliers identified during the

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<sup>6</sup> UPL90 statistics after removal of potential outliers were typically between about 0.02 and 0.06 ng/g lower, with PFDA (urban) having the largest change of 0.114 ng/g after removal of potential outliers. UTL90-95 and UTL95-95 statistics after removal of potential outliers were typically between about 0.01 and 1 ng/g lower, with the largest changes being UTL95-95 PFOS (non-urban) at about 4.8 ng/g lower after removal of potential outliers and UTL90-95 and UTL95-95 PFDA (urban) at about 3.1 ng/g lower after removal of potential outliers. PFDA and PFOS were particularly affected because they had relatively small sample sizes due to the separate urban and non-urban groupings.

background statistics analyses were included in the below summary of results, unless otherwise noted.

## 7.1 PFAS Detection Frequency and Concentrations

PFAS concentration distributions, including detect and non-detect data, are shown on Figure 2. Detection frequencies and concentrations of PFAS with greater than 10 percent detection frequency are summarized in the exhibit below.

### PFAS With Greater Than 10 Percent Detection Frequency

PFAS	Number of Detects	Number of Non-Detects	Maximum Detect (ng/g)	Percent Detect
Perfluorooctanesulfonic Acid (PFOS) [8S] (urban)	25	6	4.35	81%
Perfluorobutanoic Acid (PFBA) [3]	50	13	0.717	79%
Perfluorooctanoic Acid (PFOA) [7]	41	22	5.29	65%
Perfluorooctanesulfonic Acid (PFOS) [8S] (non-urban)	20	12	5.32	63%
Perfluorononanoic Acid (PFNA) [8]	30	33	2.02	48%
Perfluoroheptanoic Acid (PFHpA) [6]	27	36	1.62	43%
Perfluorodecanoic Acid (PFDA) [9] (urban)	11	20	3.24	35%
Perfluorohexanoic Acid (PFHxA) [5]	22	41	13.7	35%
Perfluoropentanoic Acid (PFPeA) [4]	22	41	1.58	35%
Perfluoroundecanoic Acid (PFUnA) [10]	22	41	1.93	35%
Perfluorodecanoic Acid (PFDA) [9] (non-urban)	4	28	0.164	13%

#### Notes:

- [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
[4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSAs). All of the carbons in PFSAs are fluorinated.
- Other detected PFAS, but with detection frequencies less than 10 percent, were perfluorododecanoic acid (PFDoA), perfluorotetradecanoic acid (PFTeA), perfluorohexadecanoic acid (PFHxDA), perfluorobutanesulfonic acid (PFBS), perfluorodecanesulfonic acid (PFDS), and n-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA).

Except for PFOS, the most frequently detected PFAS were perfluorocarboxylic acids (PFCAs) with perfluorinated alkyl chains ranging from three to ten carbons (i.e., PFBA through PFUnA). These findings are consistent with the Vermont Study, where the most frequently detected PFAS included PFOS and PFCAs with perfluoroalkyl chains of five to ten carbons (i.e., PFHxA through PFUnA).

Two differences in frequently detected PFAS for this study and the Vermont Study were regarding shorter-chain PFAS.

- PFBS was among the most detected PFAS in the Vermont Study, with a median concentration of 0.130 ng/g. PFBS was only detected in one sample in this study, with typical MDLs around 0.05 ng/g.

- PFBA was among the most detected PFAS in this study, with a median concentration of 0.088 ng/g. PFBA was not detected in the Vermont Study, with typical MDLs around 0.10 ng/g.

PFASs with odd number chain of perfluorinated carbons (i.e., perfluoropentanesulfonic acid [PFPeS], perfluoroheptanesulfonic acid [PFHpS], and perfluorononanesulfonic acid [PFNS]) were not detected in the background dataset. The Vermont Study did not analyze for these odd-numbered PFASs.

This study also included analysis of perfluorooctanesulfonamide (PFOSA), three fluorotelomer sulfonic acids, two perfluorooctanesulfonamidoacetic acids, and two perfluoroalkyl ether carboxylic acids. Of these PFAS, only n-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA) was detected (three detections with a maximum of 6.23 ng/g). The Vermont Study did not include analysis for these PFAS.

## 7.2 PFAS Background Statistics

The recommended PFAS background statistics are provided in Table 9, and box plots with recommended background statistics are provided in the exhibit below. Background statistics were calculated for background datasets before and after removal of outliers. Generally, the recommended UTL90, UTL90-95, and UTL95-95 statistics were based on the background datasets prior to removal of potential outliers, and the UCL95 statistics were based on the background datasets after removal of potential outliers.

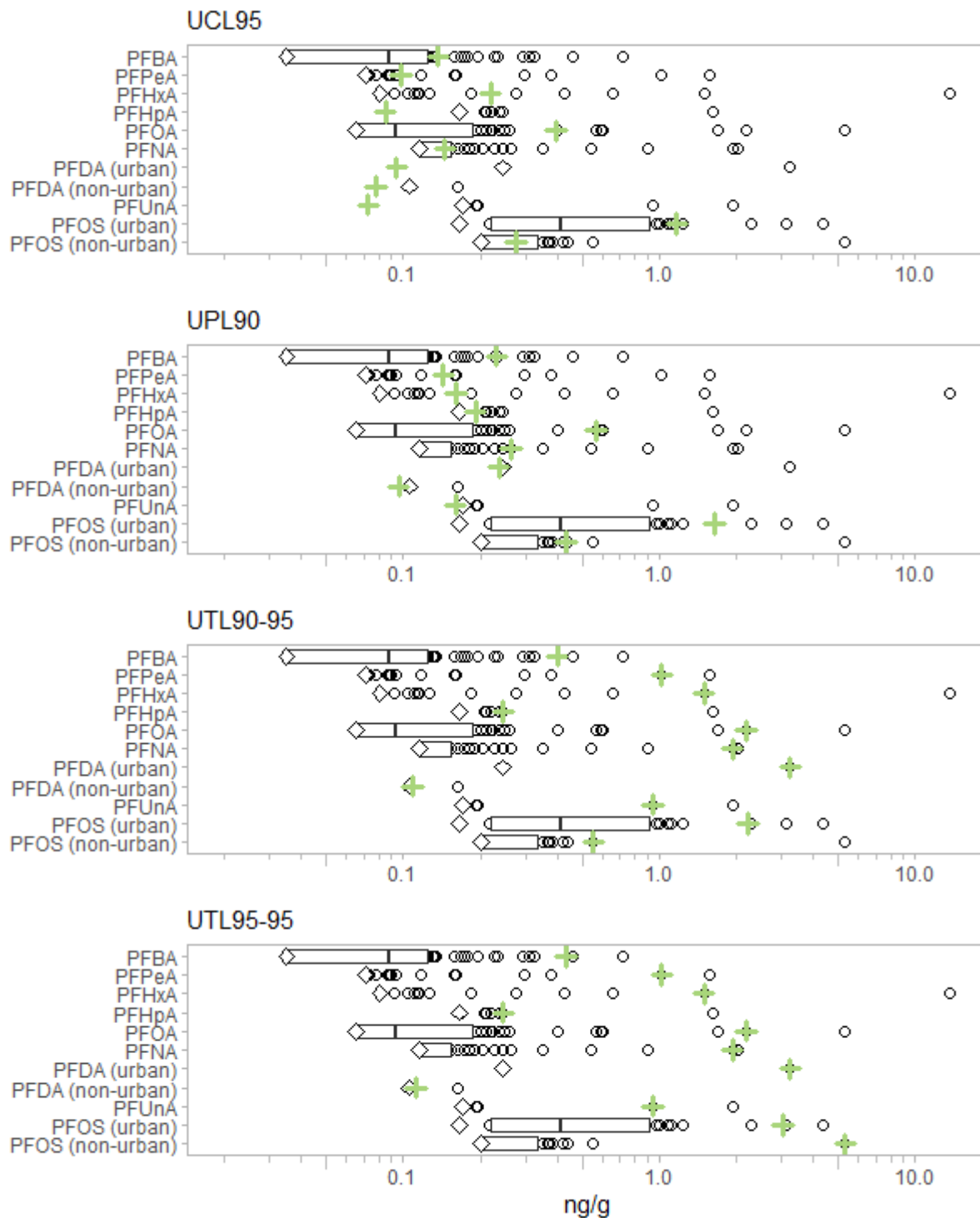
The recommended background statistics plotted over the PFAS concentration distributions are shown on Figures 3, 4, 5, and 6 (UCL95, UPL90, UTL90-95, and UTL95-95, respectively).

Of the PFAS with detected concentrations, the PFOS urban dataset generally had the highest recommended UCL95 and UPL90 background statistics, with a UCL95 of 1.17 ng/g, a UPL90 of 1.64 ng/g, a UTL90-95 of 2.22 ng/g, and a UTL95-95 of 3.04 ng/g. Other detected PFAS with UPL90, UTL90-95, or UTL95-95 background statistics greater than 1 ng/g included PFOS (non-urban), PFDA (urban), PFNA, PFOA, PFHxA, and PFPeA.

Thirteen (13) PFAS were not detected in the background dataset. For the non-detect PFAS, the UPL90, UTL90-95, UTL95-95 statistics were based on the highest non-detect MDL after removing outlier MDLs. The UCL95 statistics were not calculated for eighteen (18) PFAS because there were fewer than four detections for those PFAS.

Box plots with plotted background statistics for PFAS with greater than 10 percent detection are provided below.

### Box Plots with Recommended Background Statistics



**Notes:**

“+” indicates background statistic.

“◇” indicates the maximum non-detect MDL.

“○” indicates detected values outside of the box plot range (25<sup>th</sup> to 75<sup>th</sup> percentiles).

Only PFAS with greater than 10 percent detection frequency are plotted.

The box plot statistics are based on the 75<sup>th</sup> percentile, median, and 25<sup>th</sup> percentile of the data.

Box plots and detected values below the maximum non-detect MDL are not plotted.

### **7.3 Correlations Among PFAS, PAHs, and soil parameters**

Analytes with a 10 percent detection frequency or greater were tested for correlations with PFAS. As discussed in Section 6.6 of this Study Report, Kendall's Tau was used as an indicator of nonparametric, monotonic trend (i.e., not necessarily linear). Significant correlations were identified from p-values evaluated at a significance level of 0.05. Non-detect values were accounted for in the calculation of Kendall's Tau and p-values, but greater proportions of non-detects in data reduced the ability to detect potential underlying correlations. For some of the PFAS with a higher percentage of detected values, such as PFBA, PFOA, and PFOS, MK correlations tend to be more significant. In this discussion, "strong correlations" are equivalent to "statistically significant correlations", and the distinction between "weak correlation" and "no correlation" for this discussion is subjective.

#### **7.3.1 Correlations Among PFAS and PFAS**

The strongest and most consistent correlations were among PFAS. Correlation coefficients among PFAS were positive, indicating PFAS concentrations tend to increase together. Important factors contributing to this correlation among PFAS likely include the location-specific environment and soil properties.

The location-specific environment, which encompasses weather, topography, and hydrogeologic setting, affects the degree of atmospheric deposition and subsequent infiltration/flushing shallow soils receive. This study included sample locations with different land cover and surrounding development, topography, and vegetation. Some portion of the variation and correlation in PFAS concentrations may be attributable to these environmental differences, but such relationships were not investigated in this study.

Soil properties may also account for some portion of the variation and correlation in PFAS concentrations, as is further explored in Section 7.3.3, below. Although there is a wide range in PFAS physical and chemical properties, the PFAS included in the correlation tests are acidic/anionic molecules with perfluorinated alkyl tails of varying lengths. The similarities in chemical structure may result in these PFAS having some similar, fundamental interactions with soil (e.g., hydrophobic, electrostatic, and surfactant interactions).<sup>7</sup>

#### **7.3.2 Correlations Among PFAS and PAHs**

PAHs had either weak positive correlations or no correlations with PFAS. These weak positive correlations may be associated with soil properties that increase hydrophobic adsorption, which is a sorption mechanism common to PAHs and some PFAS. This hypothesis is supported by the fact that PAHs were positively correlated with total organic carbon (Kendall's Tau ranging from 0.13 to 0.29). Organic carbon in soil increases hydrophobic adsorption for most organic contaminants.

Correlations for PAHs with PFBA and PFOS tended to be stronger. The stronger correlations may be attributable to the higher frequency of detection for those PFAS.

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<sup>7</sup> "PFAS Technical and Regulatory Guidance Document", Section 5.2. Interstate Technology and Regulatory Council online document, updated December 2021. [https://pfas-1.itrcweb.org/5-environmental-fate-and-transport-processes/#5\\_2](https://pfas-1.itrcweb.org/5-environmental-fate-and-transport-processes/#5_2).

### 7.3.3 Correlations Among PFAS and Soil Parameters

There were significant correlations between PFAS and some soil parameters, as discussed below.

- **Soil chemistry analytes** (metals, cation exchange capacity, phosphorus, sulfur, and pH). Except for sulfur, the soil chemistry analytes generally had either weak positive correlations or no correlations with the PFAS. Some strong positive correlations were observed with aluminum and PFCAs. The only soil chemistry analyte with overall negative correlations was pH, although the pH correlations were not statistically significant. A notably different pattern was apparent for sulfur, which had strong positive correlations across all PFAS, except PFDA, which had a weak correlation. Of the soil chemistry analytes, sulfur also had the strongest positive correlation with total organic carbon (Kendall's Tau of 0.41; next highest was zinc with a Kendall's Tau of 0.27).

Correlations for soil chemistry analytes with PFBA and PFOS tended to be stronger. The stronger correlations may be attributable to the higher frequency of detection for those PFAS. PFDA, which had the lowest percent detection of the PFAS included in the correlation analysis, did not correlate with any soil chemistry analytes.

- **Soil physical properties** (percent organic matter, total organic carbon, grain size, and total solids). Measures of soil organic content were strongly correlated with PFAS, except PFDA, which had a weak correlation. Numerous previous studies have associated PFAS adsorption with organic carbon content in soils, and hydrophobic partitioning is typically cited as the likely mechanism of sorption. Plots of PFOA, PFOS, and total organic carbon are provided in the exhibit below.

Grain size was quantified using the proportion of sand, silt, and clay after passing the sample through a 2-millimeter sieve. Because the samples were sieved prior to analysis, the sand, silt, and clay fractions summed to 100 percent. Except for PFDA and PFUnA, PFAS had strong negative correlations with sand and strong positive correlations with silt and clay; PFDA and PFUnA had a mix of strong and weak correlations that were similarly negative for sand and positive for silt and clay. A potential mechanism for these correlations is increased solid-phase sorption in finer grained soils (potentially associated with some combination of surface area and organic/mineral composition). Additionally, grain size distribution is related to hydraulic properties of soil. Hydraulic properties may affect the degree of flushing in shallow soils and may similarly affect the dynamic interactions between PFAS and the air-water interfaces present in soils. Plots of PFOA, PFOS, and silt are provided in the exhibit below.

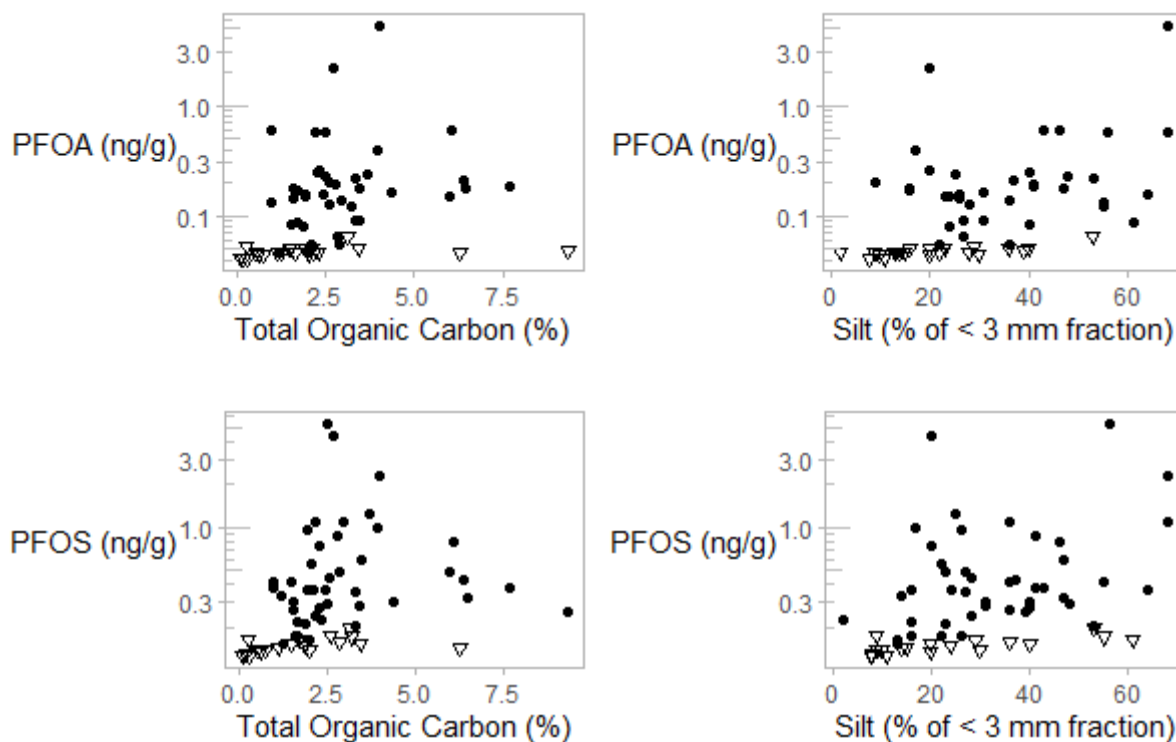
Another indicator that hydraulic properties of soil may be important is that total solids content had a strong negative correlation with PFAS, except PFDA and PFUnA, which had weak correlations. In other words, greater moisture content in soil samples was associated with higher PFAS concentrations. Some of the correlation may be an analytical artifact introduced by PFAS MDLs being directly calculated from percent solids. However, stronger correlations were identified for PFAS with higher percent detection. A visual



inspection of scatter plots also confirmed that MDLs were not a major contributor for significant correlations between total solids and PFAS.

As can be seen in the plots provided in the exhibit below, there was significant variability even for some of the strongest correlations (e.g., PFOA and total organic carbon).

### Correlation Plots for PFOA, PFOS, and Select Soil Parameters



#### Notes:

1. Non-detect values are plotted as downward pointing triangles at the MDL. In these plots, non-detect values were associated with PFOA and PFOS.
2. Sample AN-03 was not plotted because it made it harder to view the other data. AN-03 had very high total organic carbon, very low total solids, and silt was not reported because there was insufficient mineral content in the sample. The MK correlation test is robust to extreme values, so AN-03 did not have an exaggerated effect on the correlation test results.
3. Kendall's Tau values (including AN-03): PFOA x Total Organic Carbon ~ 0.34; PFOA x Silt ~ 0.32; PFOS x Total Organic Carbon ~ 0.30; and PFOS x Silt ~ 0.025.

## 8.0 LIMITATIONS

This Study Report and Appendices were prepared by Sanborn Head in accordance with generally accepted environmental evaluation practices for the exclusive use of the Maine Department of Environmental Protection for the specific application of studying the background levels of PFAS and PAHs in Maine shallow soils. This information cannot be used for standard environmental due diligence activities, such as those called for in ASTM protocols. No other party may rely on this information without the express written consent of Sanborn Head. Accuracy, completeness, and currency of the data are not guaranteed. No warranty, express or implied, is made.

Samples were collected from very widely spaced locations, and the data reflect the specific locations and depths at from which the samples were collected. The data do not necessarily indicate concentrations in soil elsewhere at the sampled property or at other properties. Variation in the types and concentrations of constituents in soil may occur due to continued or discontinued release to the environment, the passage of time, and other factors. Other constituents not included in this study may be present in Maine background soils.

This Study Report and Appendices are based upon various types of information developed by previous investigators, including publicly available data obtained from the Maine Office of GIS GeoLibrary Data Catalog and Maine Department of Environmental Protection. Interpretations, conclusions, or recommendations that rely on that information are contingent on the validity of such information. Sanborn Head did not independently confirm this information and relied upon the information as presented.

Sanborn Head's selection of sample locations was based on a review of publicly available, electronic information. Recommended sampling locations were not verified against legal boundaries or surveyed ownership lines. Permissions to sample were granted and sample locations were verified with the landowners.

## **9.0 ACKNOWLEDGEMENTS**

This study was completed for, and in partnership with, the Maine DEP. The Maine DEP made significant contributions to this work, including obtaining access permissions and collecting samples for many of the locations. The authors would also like to thank the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Transportation, and the Maine Department of Agriculture, Conservation, and Forestry – Bureau of Parks and Lands, as well as numerous municipal officials and non-profit entities, for their important contributions during site selection and coordinating access to the sampling locations.

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## TABLES



**Table 2**  
**PFAS Analyte List**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Name	Acronym	CAS No.	Units	Target MDL	Target RL	LCS Criteria (%)	LCS RPD (%)	MS Criteria (%)	MS RPD (%)	Laboratory Duplicate RPD (%)
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>										
perfluorooctadecanoic acid	PFODA	16517-11-6	ng/g	0.171	2.5	10-123	30	10-123	30	30
perfluorohexadecanoic acid	PFHxDA	67905-19-5	ng/g	0.12	2.5	18-191	30	18-191	30	30
perfluorotetradecanoic acid	PFTeA	376-06-7	ng/g	0.054	0.5	69-133	30	69-133	30	30
perfluorotridecanoic acid	PFTrA	72629-94-8	ng/g	0.2045	0.5	66-139	30	66-139	30	30
perfluorododecanoic acid	PFDoA	307-55-1	ng/g	0.07	0.5	69-135	30	69-135	30	30
perfluoroundecanoic acid	PFUnA	2058-94-8	ng/g	0.0468	0.5	64-136	30	64-136	30	30
perfluorodecanoic acid	PFDA	335-76-2	ng/g	0.067	0.25	69-133	30	69-133	30	30
perfluorononanoic acid	PFNA	375-95-1	ng/g	0.075	0.25	72-129	30	72-129	30	30
perfluorooctanoic acid	PFOA	335-67-1	ng/g	0.0419	0.25	69-133	30	69-133	30	30
perfluoroheptanoic acid	PFHpA	375-85-9	ng/g	0.0451	0.25	71-131	30	71-131	30	30
perfluorohexanoic acid	PFHxA	307-24-4	ng/g	0.0525	0.5	70-132	30	70-132	30	30
perfluoropentanoic acid	PFPeA	2706-90-3	ng/g	0.046	0.5	69-132	30	69-132	30	30
perfluorobutanoic acid	PFBA	375-22-4	ng/g	0.0227	0.5	71-135	30	71-135	30	30
<b>PERFLUOROALKYL SULFONIC ACIDS (PFsAs)</b>										
perfluorodecane sulfonic acid	PFDS	335-77-3	ng/g	0.153	0.5	59-134	30	59-134	30	30
perfluorononanesulfonic acid	PFNS	68259-12-1	ng/g	0.299	1	69-125	30	69-125	30	30
perfluorooctane sulfonic acid	PFOS	1763-23-1	ng/g	0.13	0.25	68-136	30	68-136	30	30
perfluoroheptane sulfonic acid	PFHpS	375-92-8	ng/g	0.1365	0.5	70-132	30	70-132	30	30
perfluorohexane sulfonic acid	PFHxS	355-46-4	ng/g	0.0605	0.25	67-130	30	67-130	30	30
perfluoropentane sulfonic acid	PFPeS	2706-91-4	ng/g	0.0835	1	73-123	30	73-123	30	30
perfluorobutane sulfonic acid	PFBS	375-73-5	ng/g	0.039	0.25	72-128	30	72-128	30	30
<b>FLUOROTELOMERS</b>										
8:2 fluorotelomer sulfonic acid	8:2 FTSA	39108-34-4	ng/g	0.287	0.5	65-137	30	65-137	30	30
6:2 fluorotelomer sulfonic acid	6:2 FTSA	27619-97-2	ng/g	0.1795	0.5	64-140	30	64-140	30	30
4:2 fluorotelomer sulfonic acid	4:2 FTSA	757124-72-4	ng/g	0.0645	1	62-145	30	62-145	30	30
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>										
Perfluorooctanesulfonamide	FOSA	754-91-6	ng/g	0.098	0.5	67-137	30	67-137	30	30
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>										
N-ethyl perfluorooctanesulfonamido acetic acid	EtFOSAA	2991-50-6	ng/g	0.0845	0.5	61-139	30	61-139	30	30
N-methyl perfluorooctanesulfonamido acetic acid	MeFOSAA	2355-31-9	ng/g	0.2015	0.5	63-144	30	63-144	30	30
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>										
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid	HFPO-DA (GenX acid)	13252-13-6	ng/g	3.81	10	41-165	30	41-165	30	30
4,8-dioxa-3h-perfluorononanoic acid	DONA (ADONA acid)	919005-14-4	ng/g	0.0413	1	68-143	30	68-143	30	30

Notes:  
1. Target method detection limits and reporting limits are based on personal communication with Alpha Analytical, Inc. The concentrations are estimated achievable levels assuming dry samples (i.e., 100% solids); actual method detection limits and reporting limits were adjusted based on sample-specific considerations (e.g., percent solids).  
2. "MDL" = Method Detection Limit; "RL" = Reporting Limit; "LCS" = Laboratory Control Sample; "RPD" = Relative Percent Difference; "MS" = Matrix Spike

**Table 3**  
**PAHs Analyte List**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Name	CAS No.	Units	Target MDL	Target RL	LCS Criteria (%)	LCS RPD (%)	MS Criteria (%)	MS RPD (%)	Laboratory Duplicate RPD (%)
Acenaphthene	83-32-9	ug/kg	1.4028	6.68	40-140	50	40-140	50	50
2-Chloronaphthalene	91-58-7	ug/kg	0.8684	6.68	40-140	50	40-140	50	50
Fluoranthene	206-44-0	ug/kg	0.4676	6.68	40-140	50	40-140	50	50
Naphthalene	91-20-3	ug/kg	1.2024	6.68	40-140	50	40-140	50	50
Benzo(a)anthracene	56-55-3	ug/kg	0.6346	6.68	40-140	50	40-140	50	50
Benzo(a)pyrene	50-32-8	ug/kg	0.8016	6.68	40-140	50	40-140	50	50
Benzo(b)fluoranthene	205-99-2	ug/kg	0.6346	6.68	40-140	50	40-140	50	50
Benzo(k)fluoranthene	207-08-9	ug/kg	0.6012	6.68	40-140	50	40-140	50	50
Chrysene	218-01-9	ug/kg	0.501	6.68	40-140	50	40-140	50	50
Acenaphthylene	208-96-8	ug/kg	0.835	6.68	40-140	50	40-140	50	50
Anthracene	120-12-7	ug/kg	0.5344	6.68	40-140	50	40-140	50	50
Benzo(ghi)perylene	191-24-2	ug/kg	0.5678	6.68	40-140	50	40-140	50	50
Fluorene	86-73-7	ug/kg	0.8016	6.68	40-140	50	40-140	50	50
Phenanthrene	85-01-8	ug/kg	0.5678	6.68	40-140	50	40-140	50	50
Dibenzo(a,h)anthracene	53-70-3	ug/kg	0.668	6.68	40-140	50	40-140	50	50
Indeno(1,2,3-cd)Pyrene	193-39-5	ug/kg	0.8016	6.68	40-140	50	40-140	50	50
Pyrene	129-00-0	ug/kg	0.4676	6.68	35-142	50	35-142	50	50
1-Methylnaphthalene	90-12-0	ug/kg	1.0354	6.68	40-140	50	40-140	50	50
2-Methylnaphthalene	91-57-6	ug/kg	1.9038	6.68	40-140	50	40-140	50	50

Notes:  
1. Target method detection limits and reporting limits are based on personal communication with Alpha Analytical, Inc. The concentrations are estimated achievable levels assuming dry samples (i.e., 100% solids); actual method detection limits and reporting limits were adjusted based on sample-specific considerations (e.g., percent solids).  
2. "MDL" = Method Detection Limit; "RL" = Reporting Limit; "LCS" = Laboratory Control Sample; "RPD" = Relative Percent Difference; "MS" = Matrix Spike









**Table 5**  
**Summary of Analytical Data - PAHs in Soil**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Sample Location	Lab Sample ID	Sample Date	Concentrations in µg/kg																	
			PAHs																	
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene (1-)	Methylnaphthalene (2-)	Naphthalene	Phenanthrene	Pyrene
May 2021 Maine DEP Soil RAGs (see notes for definitions)	Leaching to GW		300,000	290,000	3,200,000	5,800	16,000	170,000	100,000,000	1,600,000	5,000,000	53,000	4,900,000	300,000	540,000	3,300	10,000	210	320,000	720,000
	Resident		4,900,000	4,900,000	25,000,000	16,000	1,600	16,000	2,500,000	160,000	1,600,000	1,600	3,300,000	3,300,000	16,000	240,000	330,000	29,000	2,500,000	2,500,000
	Commercial Worker		62,000,000	45,000,000	100,000,000	280,000	29,000	290,000	23,000,000	2,900,000	29,000,000	29,000	41,000,000	41,000,000	290,000	990,000	4,100,000	120,000	23,000,000	31,000,000
	Park User		14,000,000	14,000,000	70,000,000	45,000	4,500	45,000	7,000,000	450,000	4,500,000	4,500	9,300,000	9,300,000	45,000	680,000	930,000	150,000	7,000,000	7,000,000
	Recreator Sediment		16,000,000	16,000,000	81,000,000	52,000	5,200	52,000	8,100,000	520,000	5,200,000	5,200	11,000,000	11,000,000	52,000	790,000	1,100,000	190,000	8,100,000	8,100,000
Construction Worker		48,000,000	48,000,000	100,000,000	1,700,000	9,900	1,700,000	72,000,000	17,000,000	100,000,000	170,000	24,000,000	96,000,000	1,700,000	6,000,000	960,000	130,000	72,000,000	72,000,000	
May 2021 Maine DEP Background	Undeveloped		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Rural Developed		100	320	290	860	1,500	1,300	570	690	1,000	320	2,000	220	400	NS	160	110	830	2,000
	Urban Developed		200	390	400	1,600	1,700	2,000	790	760	2,300	230	3,200	290	740	NS	89	220	1,600	2,800
	Urban Fill		3,500	1,400	6,700	27,000	5,200	6,800	16,000	12,000	6,400	4,500	10,000	4,400	3,300	NS	410	822	6,100	9,500
PI-03	L2162323-13	11/10/2021	<1.5	5.7 J	2.6 J	14	10	14	8.7	3.8 J	7.8	1.9 J	12	<0.84	9.4	<1.1	<2.0	<1.3	3.4 J	13
PI-04	L2162323-14	11/11/2021	5.6 J	33	15	120	91	120	68	42	92	14	220	9.3	76	4.4 J	3.1 J	3.5 J	120	220
SA-01	L2162323-23	11/9/2021	<1.6	6.8 J	2.6 J	18	11	16	8.6	5.1 J	13	1.9 J	23	1.1 J	9.4	<1.2	<2.2	<1.4	12	24
SA-02	L2164267-20	11/18/2021	27	42	63	320	240	310	150	99	270	41	420	22	180	5.7 J	7.0 J	13	200	390
SA-03	L2162323-24	11/9/2021	<3.6	15 J	5.8 J	62	15 J	24	16 J	6.0 J	25	4.6 J	27	2.9 J	12 J	<2.7	<4.9	<3.1	13 J	31
SA-04	L2164267-18	11/17/2021	<1.7	1.6 J	1.4 J	10	9.4	13	5.0 J	4.7 J	7.7 J	1.6 J	15	<0.96	7.0 J	<1.2	<2.3	<1.4	3.5 J	14
SO-01	L2164267-27	11/19/2021	<1.7	<1.0	0.66 J	3.9 J	1.8 J	2.7 J	1.4 J	0.86 J	2.0 J	<0.82	3.9 J	<0.98	1.5 J	<1.3	<2.3	<1.5	2.2 J	3.5 J
SO-02	L2164267-26	11/18/2021	<1.8	<1.0	<0.67	4.0 J	2.4 J	3.6 J	1.8 J	1.2 J	2.5 J	<0.84	4.8 J	<1.0	2.2 J	<1.3	<2.4	<1.5	2.0 J	4.2 J
SO-03	L2162323-16	11/11/2021	<1.7	2.4 J	1.1 J	6.1 BJ	6.4 J	9.5 B	5.6 J	3.6 J	7.2 BJ	1.0 J	16 B	<0.95	5.9 J	<1.2	<2.2	<1.4	7.7 BJ	15
SO-04	L2162323-15	11/11/2021	60 J	520	680	2,000	1,500	2,000	830	780	1,700	250	4,600	300	980	38 J	33 J	28 J	2,800	3,600
WL-01	L2162323-07	11/10/2021	<1.5	<0.90	<0.58	1.2 J	<0.86	1.2 J	<0.61	<0.65	0.68 J	<0.72	0.54 J	<0.86	<0.86	<1.1	<2.0	<1.3	<0.61	0.58 J
WL-02	L2162323-08	11/10/2021	<2.3	4.4 J	2.1 J	13	9.3 J	15	10 J	4.9 J	7.8 J	2.5 J	12	<1.3	11	<1.7	<3.1	<2.0	4.1 J	12
WL-03	L2162323-10	11/10/2021	120 J	2,200	970	5,400	5,100	7,100	3,500	2,300	5,900	920	14,000	520	4,000	210	240	430	6,800	12,000
WL-04	L2164267-13	11/17/2021	<1.7	<0.99	<0.63	1.1 J	<0.95	0.91 J	<0.67	<0.71	0.75 J	<0.79	1.3 J	<0.95	<0.95	<1.2	<2.2	<1.4	0.83 J	1.3 J
WS-01	L2164327-14	11/18/2021	<1.7	2.3 J	3.0 J	13	7.5 J	11 B	5.0 BJ	3.5 J	8.8	1.2 J	22	<0.98	6.3 J	<1.3	<2.3	1.7 J	12	19
WS-02	L2164327-15	11/18/2021	7.3 J	37	46	210	140	200 B	84	48	150	25 J	300	18 J	100	6.0 J	<9.3	9.8 J	200	270
WS-03	L2164327-16	11/18/2021	81	1,100	510	3,300	2,000	2,400 B	1,400	760	1,700	400	2,700	190	1,600	110	140	210	1,300	3,100
WS-04	L2164327-17	11/18/2021	220	560	770	3,400	2,200	2,700 B	1,300	930	2,200	390	5,000	320	1,500	170	270	200	3,400	4,700
YO-01	L2162323-20	11/8/2021	<1.4	<0.86	<0.55	1.3 BJ	1.1 J	1.4 J	0.72 BJ	<0.62	1.0 J	<0.68	1.6 J	<0.82	0.82 J	<1.1	<2.0	<1.2	0.58 J	1.5 J
YO-02	L2162323-17	11/8/2021	<1.6	<0.95	0.68 J	2.1 BJ	1.9 J	2.4 J	1.3 BJ	1.3 J	2.2 J	0.91 BJ	4.2 J	<0.91	1.6 J	<1.2	<2.2	<1.4	2.6 J	3.6 J
YO-03	L2162323-18	11/8/2021	<2.1	<1.2	0.85 J	2.4 BJ	2.4 J	3.7 J	2.0 BJ	1.5 J	3.0 J	<1.0	6.1 J	<1.2	2.2 J	2.9 J	4.7 J	2.6 J	3.6 J	5.8 J
YO-04	L2162323-19	11/8/2021	<1.8	10	6.7 J	35	43	61	29	24	46	5.3 BJ	85	1.9 J	32	<1.3	<2.5	1.7 J	30	73

Notes:

1. Samples were collected by Sanborn Head or Maine Department of Environmental Protection (Maine DEP). Samples were analyzed by Alpha Analytical (Alpha) of Mansfield and Westborough, Massachusetts, for analysis of polycyclic aromatic hydrocarbons (PAHs) using USEPA Method 8270D with selected ion monitoring (SIM).
2. PAH results are presented in micrograms per kilogram (µg/kg), which are equivalent to parts per billion (ppb) by mass. Refer to Study Report Table 3 and the analytical laboratory reports for the complete list of parameters analyzed.
3. "<" indicates the analyte was not detected at or above the indicated laboratory Method Detection Limit (MDL).  
 "B" indicates the compound was present in the associated laboratory method blank or field QC blank. Refer to Table 8 for additional details.  
 "J" indicates the result is considered estimated because of Data Quality Assessment actions (see Table 8) or the concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL).
4. "Maine DEP Soil RAGs" and the PAH background values refer to Maine DEP Remedial Action Guidelines (RAGs), dated May 1, 2021.
5. "NS" indicates the analyte not listed in the Maine DEP RAGs document dated May 1, 2021.



**Table 6**  
**Summary of Analytical Data - Soil Parameters**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Sample Location	Lab Sample ID	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	meq/100g	mg/kg	mg/kg	S.U.	%	-	%	%	%	%	%	%
			Metals via UMaine Soil Laboratory Methods (dry weight basis, < 2 mm size fraction)											Other Soil Parameters via UMaine Soil Laboratory Methods (dry weight basis, < 2 mm fraction)							Other Soil Parameters via Alpha Methods (dry weight basis, except total solids)				
			Aluminum (via ICP-OES)	Boron (via ICP-OES)	Calcium (via ICP-OES)	Copper (via ICP-OES)	Iron (via ICP-OES)	Magnesium (via ICP-OES)	Manganese (via ICP-OES)	Potassium (via ICP-OES)	Sodium (via ICP-OES)	Zinc (via ICP-OES)	Cation Exchange Capacity (via ICP-OES)	Phosphorus (via colorimetric flow injection analysis)	Sulfur (via ICP-OES)	pH (distilled water and Mehlich lime buffer)	% Organic Matter (loss on ignition at 375 degrees Celsius)	U.S. Department of Agriculture Texture Class	% Total Clay (< 2 mm fraction)	% Total Sand (< 2 mm fraction)	% Total Silt (< 2 mm fraction)	Total Organic Carbon (Average)	Total Organic Carbon (Rep1)	Total Organic Carbon (Rep2)	Total Solids
PI-03	L2162323-13	11/10/2021	38	<0.05	238	0.1	2.2	17.3	1.6	34	2.9	0.02	1.4	0.4	1	5.93	0.6	Loamy sand	4	85	11	0.327	0.310	0.343	93.4
PI-04	L2162323-14	11/11/2021	477	<0.05	240	0.42	15.5	18.2	4	35	13.9	0.11	1.6	1.5	16.2	5.57	6	Silt loam	16	31	53	3.33 I	3.32 I	3.35 I	71.3
SA-01	L2162323-23	11/9/2021	159	<0.05	289	0.09	14.1	21.3	1.8	33	7.2	1	1.9	4.2	5.4	5.81	2.3	Loamy sand	5	79	16	1.69	1.70	1.67	84.6
SA-02	L2164267-20	11/18/2021	208	0.1	562	0.53	58.8	64.3	4.4	166	25.2	0.5	3.9	1.5	37.8	6.09	3.5	Sandy loam	9	71	20	2.70	2.71	2.68	78.4
SA-03	L2162323-24	11/9/2021	44	0.16	1,008	0.44	15.5	200.5	4.9	172	11.8	27.69	7.3	1.1	4.1	5.71	2.3	Silt loam	31	14	55	0.982	0.980	0.985	76.3
SA-04	L2164267-18	11/17/2021	144	0.05	560	0.21	11.1	31.6	3.8	84	6.7	0.6	4.2	1.8	5.8	5.45	2.7	Sandy loam	15	59	26	1.60	1.36	1.84	81.6
SO-01	L2164267-27	11/19/2021	338	0.06	83	0.18	8.3	8.1	1.4	63	5.2	0.15	0.7	0.8	27.1	6.23	1.9	Loam	8	49	43	0.973	1.00	0.944	80.6
SO-02	L2164267-26	11/18/2021	231	<0.05	265	0.14	6.5	25.1	2.7	102	8.3	0.12	1.8	1.2	4.5	6.24	3	Loam	17	43	40	1.56	1.52	1.60	79.7
SO-03	L2162323-16	11/11/2021	66	<0.05	452	0.32	16.4	33.3	13.1	20	62	0.22	4.4	0.4	4.4	4.97	2.1	Loamy sand	4	83	13	1.99	2.05	1.93	82.9
SO-04	L2162323-15	11/11/2021	120	<0.05	387	0.53	18.3	55	12.9	99	16.7	0.61	2.7	0.5	5.7	5.89	2.9	Sandy loam	16	54	30	2.02	1.89	2.15	86.1
WL-01	L2162323-07	11/10/2021	124	<0.05	87	0.07	3.3	10.9	1.4	30	3.9	0.16	0.6	0.6	2.9	5.96	1.3	Loamy sand/Sand	3	88	9	0.540	0.486	0.594	89.9
WL-02	L2162323-08	11/10/2021	22	0.29	2,571	0.76	7.6	69.8	6.2	52	12.1	5.34	9.1	34.2	9.6	6.79	5.9	Sandy loam	6	73	21	4.22	3.58	4.87	59.1
WL-03	L2162323-10	11/10/2021	45	0.07	136	0.13	7.8	96.1	5.4	58	85.9	0.62	2.0	5	1.7	6.44	2.8	Loamy sand	5	81	14	6.27	6.32	6.23	81.0
WL-04	L2164267-13	11/17/2021	92	<0.05	379	0.21	7.9	43.7	8.7	40	9.7	0.74	2.4	0.7	4.2	6.02	2.2	Sandy loam	5	71	24	1.88	1.95	1.81	82.6
WS-01	L2164327-14	11/18/2021	265	<0.05	95	0.15	25	17.9	9.2	56	8.4	1.1	1.7	0.8	7.1	5.29	3.7	Sandy loam	10	70	20	3.45	3.32	3.58	81.0
WS-02	L2164327-15	11/18/2021	305	<0.05	213	0.21	68.9	38.3	7.9	165	14.4	2.28	4.0	13.6	19.6	5.07	10.2	Loam	13	50	37	6.38	6.28	6.48	60.1
WS-03	L2164327-16	11/18/2021	54	0.18	1,780	0.18	5.9	110.2	7.8	61	10.8	10.09	10.5	1.5	3.8	5.86	7.4	Sandy loam	11	66	23	5.97	6.07	5.87	73.5
WS-04	L2164327-17	11/18/2021	160	0.05	528	0.25	10.2	75.3	4.7	89	16.5	6.84	4.1	1.5	5.7	5.64	5	Sandy loam	9	64	27	3.33	3.46	3.20	82.6
YO-01	L2162323-20	11/8/2021	15	<0.05	129	0.27	4.2	12.1	0.8	15	1.5	0.15	0.8	0.4	0.2	6.54	0.2	Sand	2	90	8	0.107	0.090	0.123	95.1
YO-02	L2162323-17	11/8/2021	18	<0.05	69	0.08	11.6	18.5	0.2	10	1.7	0.04	0.5	1.1	0.8	5.74	0.4	Sand	2	96	2	2.32	2.10	2.54	86.3
YO-03	L2162323-18	11/8/2021	341	<0.05	22	0.05	8	5.9	1.5	14	4.9	0.17	0.5	0.9	33	5.48	3.2	Loamy sand	7	84	9	2.60	2.52	2.67	64.6
YO-04	L2162323-19	11/8/2021	272	<0.05	59	0.14	12.6	12	8.4	33	7.1	0.94	1.5	2.2	29.3	5.27	4.7	Sandy loam	8	65	27	2.86	3.18	2.54	75.0

- Notes:
1. Samples were collected by Sanborn Head or Maine Department of Environmental Protection (Maine DEP). Samples were analyzed by Alpha Analytical (Alpha) of Mansfield and Westborough, Massachusetts, and by the University of Maine Soil Testing Service (UMaine Soil Laboratory). Alpha completed the soil analyses for total organic carbon (Lloyd Kahn Method) and percent solids (Standard Method 2540G). The UMaine Soil Laboratory used standardized methodology typical for assessing agricultural soils for fertility. The UMaine Soil Laboratory analyzed metals and sulfur by inductively coupled plasma - optical emission spectrometry (ICP-OES); phosphorus by flow injection analysis (colorimetric); soil pH with a pH probe using distilled water and Mehlich lime buffer; organic matter by loss on ignition at 375 degrees Celsius; the UMaine Soil Laboratory determined effective cation exchange capacity by summation of milliequivalent levels of Ca, K, Mg, Na, and acidity, with adjustment at higher pH. The UMaine Soil Laboratory determined particle size by hydrometer and wet sieving. The UMaine Soil Laboratory analyses, including particle size, were performed on the "less than 2 millimeter size fraction" (< 2 mm fraction) of the provided soil sample.
  2. Soil parameters are presented in milligrams per kilogram (mg/kg) which are equivalent to parts per million (ppm) by mass, unless otherwise indicated. "meq/100g" is milliequivalents per hundred grams, and "S.U." is standard units for pH.
  3. "<" indicates the analyte was not detected at or above the indicated laboratory Method Detection Limit (MDL).  
 "I" indicates the percent recovery in the MS/MSD was outside acceptance criteria.  
 "J" indicates the result is considered estimated because of Data Quality Assessment actions (see Table 8).



**Table 7**  
**Summary of Analytical Data - Field QA/QC Sample Results**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Sample Location	Lab Sample ID	Sample Date	Concentrations in µg/kg																			
			PAHs																			
			Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chloronaphthalene (2-)	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene (1-)	Methylnaphthalene (2-)	Naphthalene	Phenanthrene	Pyrene	
Maine DEP Soil RAGs	Leaching to GW		300,000	290,000	3,200,000	5,800	16,000	170,000	100,000,000	1,600,000	210,000	5,000,000	53,000	4,900,000	300,000	540,000	3,300	10,000	210	320,000	720,000	
	Resident		4,900,000	4,900,000	25,000,000	16,000	1,600	16,000	2,500,000	160,000	6,500,000	1,600,000	1,600	3,300,000	3,300,000	16,000	240,000	330,000	29,000	2,500,000	2,500,000	
	Commercial Worker		62,000,000	45,000,000	100,000,000	280,000	29,000	290,000	23,000,000	2,900,000	82,000,000	29,000,000	29,000	41,000,000	41,000,000	290,000	990,000	4,100,000	120,000	23,000,000	31,000,000	
	Park User		14,000,000	14,000,000	70,000,000	45,000	4,500	45,000	7,000,000	450,000	19,000,000	4,500,000	4,500	9,300,000	9,300,000	45,000	680,000	930,000	150,000	7,000,000	7,000,000	
	Recreator Sediment		16,000,000	16,000,000	81,000,000	52,000	5,200	52,000	8,100,000	520,000	22,000,000	5,200,000	5,200	11,000,000	11,000,000	52,000	790,000	1,100,000	190,000	8,100,000	8,100,000	
Background	Construction Worker		48,000,000	48,000,000	100,000,000	1,700,000	9,900	1,700,000	72,000,000	17,000,000	48,000,000	100,000,000	170,000	24,000,000	96,000,000	1,700,000	6,000,000	960,000	130,000	72,000,000	72,000,000	
	Undeveloped		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Rural Developed		100	320	290	860	1,500	1,300	570	690	NS	1,000	320	2,000	220	400	NS	160	110	830	2,000	
	Urban Developed		200	390	400	1,600	1,700	2,000	790	760	NS	2,300	230	3,200	290	740	NS	89	220	1,600	2,800	
	Urban Fill		3,500	1,400	6,700	27,000	5,200	6,800	16,000	12,000	NS	6,400	4,500	10,000	4,400	3,300	NS	410	822	6,100	9,500	
Sample Locations with Field Duplicates																						
AN-02	L2164267-23	11/18/2021	12	120	89	470	330	400	260	130	<1.1	270	64	530	25	290	7.0	8.0	16	210	510	
AN-02 Dup.	L2164267-24	11/18/2021	640	200	1,600	3,500	2,500	2,900	1,400	1,100	<1.0	2,200	390	6,200	940	1,700	200	300	670	5,700	5,000	
			RPD (%)	193%	50%	179%	153%	153%	152%	137%	158%	-	156%	144%	168%	190%	142%	186%	190%	191%	186%	163%
FR-04	L2164267-09	11/16/2021	230	3,800	2,600	19,000	12,000	15,000	7,600	5,200	<110	11,000	2,200	24,000	1,100	9,100	200	<250	260	7,600	22,000	
FR-04 Dup.	L2164267-10	11/16/2021	550	5,100	5,700	25,000	14,000	19,000	8,600	6,400	<120	14,000	2,800	36,000	3,600	10,000	250	<260	220	20,000	29,000	
			RPD (%)	82%	29%	75%	27%	15%	24%	12%	21%	-	24%	24%	40%	106%	9%	-	-	17%	90%	27%
OX-02	L2164267-03	11/15/2021	<1.7	6.8	4.0	23	17	25	14	8.6	<1.1	17	3.5	32	1.4	16	<1.3	<2.4	2.2	16	30	
OX-02 Dup.	L2164267-04	11/15/2021	<1.7	7.6	3.4	22	16	25	14	7.2	<1.0	17	3.0	29	1.7	15	1.3	<2.3	2.4	14	29	
			RPD (%)	-	11%	16%	4%	6%	0%	0%	-	0%	15%	10%	19%	6%	-	-	9%	13%	3%	
PE-02	L2164327-06	11/17/2021	18	110	110	780	540	680	330	230	<2.1	490	100	920	24	410	6.7	9.4	16	300	860	
PE-02 Dup.	L2164327-09	11/17/2021	14	91	99	780	550	700	340	230	<2.1	470	100	970	18	400	5.1	7.3	14	240	880	
			RPD (%)	25%	19%	11%	0%	2%	3%	3%	0%	-	4%	0%	5%	29%	2%	27%	25%	13%	22%	2%
WL-02	L2162323-08	11/10/2021	<2.3	4.4	2.1	13	9.3	15	10	4.9	<1.4	7.8	2.5	12	<1.3	11	<1.7	<3.1	<2.0	4.1	12	
WL-02 Dup. ¥	L2202048-01	11/10/2021																				
			RPD (%)																			
Field QA/QC Blanks																						
EB-01	L2162323-27	11/10/2021	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	
EB-02	L2164267-29	11/17/2021	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	
EB-03	L2164267-30	11/19/2021	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	
EB-04	L2164327-21	11/17/2021																				
EB-05	L2164327-22	11/17/2021	<0.01	<0.01	<0.01	<0.02	<0.02	0.02	B	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.05	<0.02	
FB-01	L2162323-28	11/10/2021																				
FB-02	L2164267-31	11/17/2021																				
FB-03	L2164267-32	11/18/2021																				
FB-04	L2164327-19	11/17/2021																				
FB-05	L2164327-20	11/18/2021																				
TB-1	L2162323-09	11/3/2021																				
TB-2	L2162323-26	11/3/2021																				
TB-01	L2164267-33	11/19/2021																				
TB-02	L2164267-34	11/19/2021																				
TB-03	L2164327-18	11/3/2021																				
TB-04	L2164327-23	11/3/2021																				
TB-05	L2164327-24	11/3/2021																				



**Table 8**  
**Data Quality Assessment Actions**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Lab Job #	Matrix	Analyses	Total Solids (%) Actionable Item	EB Detections	FB Detections	TB Detections	Method Blank Detections	Surrogate Actionable Items	MS/MSD Actionable Items	Lab Dup Actionable Items	LCS/LCSD Actionable Items	Data Quality Assessment Actions
<b>Soil Samples</b>												
Alpha L2162323	SO	PAHs, PFAS, TOC, TS	None	None	<b>FB-01_20211115</b> PFTeA: 0.276 J ng/l	<b>TB-1_11032021</b> PFNA: 1.02 J ng/l PFTeA: 0.249 J ng/l	<b>WG1571478-1</b> PFTeA: 0.456 J ng/l  <b>WG1574236-1</b> Benzo(a)anthracene: 0.66 J ug/kg Benzo(ghi)perylene: 0.56 J ug/kg Dibenzo(a,h)anthracene: 1.2 J ug/kg  <b>WG1575295-1</b> Fluoranthene: 1.8 J ug/kg Benzo(a)anthracene: 1.2 J ug/kg Benzo(b)fluoranthene: 0.99 J ug/kg Chrysene: 0.86 J ug/kg Phenanthrene: 0.99 J ug/kg Pyrene: 1.4 J ug/kg	<b>LI-03_11092021</b> M8FOSA: 9% M2PFHxDA: 10%  <b>KN-04_11092021</b> M8FOSA: 6%  <b>WL-01_11102021</b> d5-NMeFOSAA: 7%  <b>WL-03_11102021</b> Nitrobenzene-d5: 0% 2-Fluorobiphenyl: 0% 4-Terphenyl-d14: 0%  <b>SO-03_11112021</b> M8FOSA: 9%  <b>YO-03_11082021</b> d3-NMeFOSAA: 1% d5-NEtFOSAA: 3% M2PFHxDA: 9%  <b>SA-03_11092021</b> M8FOSA: 8%	<b>CU-02_11082021</b> PFTeA MS: 137%R  <b>PI-04_11112021</b> Total Organic Carbon (Rep1) MS: 220%R Total Organic Carbon (Rep2) MS: 143%R  <b>LI-01_11092021</b> Total Organic Carbon (Rep2) MS: 127%R	None	None	<b>Field Duplicates (see Table 5)</b> • NEtFOSAA results for WL-02_20211110 and associated field duplicate were qualified because of RPDs greater than 50%.  <b>FB and TB Detections</b> • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where detected.  <b>Method Blank Detections</b> • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where the result was within 10x blank detection level. • No impact in associated samples where result was 10x greater than blank detection level.  <b>Surrogates</b> • Target compounds associated with M8FOSA, d3-NMeFOSAA, d5-NMeFOSAA, and M2PFHxDA J qualified in associated samples; potential low bias. • 0% recovery for nitrobenzene-d5, 2-fluorobiphenyl, and 4-terphenyl-d14 in associated sample WL-03_11102021 due to dilution required to quantitate the sample; no action taken.  <b>MS/MSD</b> • PFTeA, Total Organic Carbon (Rep1), Total Organic Carbon (Rep2), and Total Organic Carbon (Average) 'I' qualified for suspected matrix interference in associated samples; indeterminate bias.
Alpha L2164267	SO	PAHs, PFAS, TOC, TS	<b>AN-03_20211118</b> TS: 24.4%	<b>EB-02_20211117</b> PFTeA: 0.411 J ng/l  <b>EB-03_20211119</b> PFTeA: 0.407 J ng/l	<b>FB-02_20211117</b> PFTeA: 0.361 J ng/l  <b>FB-03_20211118</b> PFTeA: 0.413 J ng/l	<b>TB-01_20211119</b> PFTeA: 0.405 J ng/l  <b>TB-02_20211119</b> PFTeA: 0.353 J ng/l	<b>WG1576515-1</b> PFTeA: 0.072 J ng/g PFHxDA: 0.126 J ng/g  <b>WG1576595-1</b> PFTeA: 0.468 J ng/l  <b>WG1576793-1</b> Fluoranthene: 0.52 J ug/kg Benzo(a)anthracene: 1.2 J ug/kg Benzo(b)fluoranthene: 0.85 J ug/kg Chrysene: 0.49 J ug/kg Benzo(ghi)perylene: 0.56 J ug/kg Pyrene: 0.46 J ug/kg	<b>OX-01_20211115</b> d3-NMeFOSAA: 3% d5-NEtFOSAA: 4%  <b>FR-04_20211116;</b> <b>FR-04_20211116-DUP</b> Nitrobenzene-d5: 0% 2-Fluorobiphenyl: 0% 4-Terphenyl-d14: 0%  <b>FR-02_20211116</b> d3-NMeFOSAA: 8%  <b>AN-02_20211118</b> d3-NMeFOSAA (reanalysis): 7%  <b>AN-02_20211118_DUP</b> d3-NMeFOSAA (reanalysis): 5% d5-NEtFOSAA (reanalysis): 5%  <b>SO-02_20211118</b> d3-NMeFOSAA: 10%  <b>SO-01_20211119</b> d3-NMeFOSAA (reanalysis): 2% d5-NEtFOSAA (reanalysis): 2%	<b>AN-04_20211118</b> NEtFOSAA MS: 173%R  <b>OX-04_20211116</b> Total Organic Carbon (Rep2) MS: 61%R  <b>PI-02_20211119</b> Total Organic Carbon (Rep1) MS: 44%R	<b>OX-04_20211116</b> Total Organic Carbon (Rep2): RPD 34%	<b>WG1576793-2;</b> <b>WG1576793-3</b> 2-Methylnaphthalene LCSD: 156%R; RPD: 55%	<b>Field Duplicate (see Table 5) and Total Solids</b> • Some PAH analytical results for AN-02_20211118, FR-04_20211116, and associated field duplicates were qualified because of RPDs greater than 50%. • Analytical results for AN-03_20211118 were J qualified because total solids were less than 30%.  <b>EB, FB, and TB Detections</b> • Some PAH analytical results for AN-02_20211118, FR-04_20211116, and associated field duplicates were qualified because of RPDs greater than 50%. • Analytical results for AN-03_20211118 were J qualified because total solids were less than 30%. • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where detected.  <b>Method Blank Detections</b> • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where the result was within 10x blank detection level. • No impact in associated samples where result was 10x greater than blank detection level.  <b>Surrogates</b> • NMeFOSAA and NEtFOSAA J qualified in associated samples; potential low bias. • 0% recovery for nitrobenzene-d5, 2-fluorobiphenyl, and 4-terphenyl-d14 in associated samples FR-04_20211116 and FR-04_20211116-DUP due to dilution required to quantitate the sample; no action taken.  <b>MS/MSD</b> • NEtFOSAA, Total Organic Carbon (Rep1), Total Organic Carbon (Rep2), and Total Organic Carbon (Average) 'I' qualified for suspected matrix interference in associated samples; indeterminate bias.  <b>Lab Dup</b> • Total Organic Carbon (Rep2) and Total Organic Carbon (Average) J qualified in associated sample OX-04_20211116; indeterminate bias.  <b>LCS/D</b> • 2-Methylnaphthalene J qualified in associated samples AN-03_20211118 and SA-02_20211117; potential high bias. 2-Methylnaphthalene ND in associated sample AN-04_20211118; no impact.



**Table 8**  
**Data Quality Assessment Actions**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Lab Job #	Matrix	Analyses	Total Solids (%) Actionable Item	EB Detections	FB Detections	TB Detections	Method Blank Detections	Surrogate Actionable Items	MS/MSD Actionable Items	Lab Dup Actionable Items	LCS/LCSD Actionable Items	Data Quality Assessment Actions
<b>Soil Samples</b>												
Alpha L2164327	SO	PAHs, PFAS, TOC, TS	None	<b>EB-04_20211117</b> PFPeA: 0.706 J ng/l PFTeA: 0.492 J ng/l  <b>EB-05_20211117</b> Benzo(b)fluoranthene: 0.02 J ug/l	<b>FB-04_20211117</b> PFPeA: 0.703 J ng/l PFTeA: 0.535 J ng/l	<b>TB-03_20211103</b> PFPeA: 0.422 J ng/l PFTeA: 0.225 J ng/l  <b>TB-04_20211103</b> PFPeA: 0.485 J ng/l PFTeA: 0.381 J ng/l  <b>TB-05_20211103</b> PFPeA: 0.408 J ng/l PFTeA: 0.464 J ng/l	<b>WG1575373-1</b> PFTeA: 0.292 J ng/l  <b>WG1575467-1</b> Fluoranthene: 0.02 J ug/l Benzo(a)anthracene: 0.03 J ug/l Benzo(b)fluoranthene: 0.02 J ug/l Benzo(k)fluoranthene: 0.01 J ug/l Chrysene: 0.01 J ug/l Acenaphthylene: 0.04 J ug/l Phenanthrene: 0.03 J ug/l Indeno(1,2,3-cd)pyrene: 0.02 J ug/l Pyrene: 0.02 J ug/l  <b>WG1576515-1</b> PFTeA: 0.072 J ng/g PFHxDA: 0.126 J ng/g  <b>WG1576793-1</b> Fluoranthene: 0.52 J ug/kg Benzo(a)anthracene: 1.2 J ug/kg Benzo(b)fluoranthene: 0.85 J ug/kg Chrysene: 0.49 J ug/kg Benzo(ghi)perylene: 0.56 J ug/kg Pyrene: 0.46 J ug/kg  <b>WG1577473-1</b> PFPeA: 0.512 J ng/l PFTeA: 0.616 J ng/l  <b>WG1577684-1</b> PFTeA: 0.356 J ng/l  <b>WG1584302-1</b> PFTeA: 0.324 J ng/l	<b>HA-03_20211118</b> Nitrobenzene-d5: 123%	<b>PE-03_20211119</b> Total Organic Carbon (Rep1) MS: 0%R Total Organic Carbon (Rep2) MS: 181%R	<b>PE-03_20211119</b> Total Organic Carbon (Rep1): RPD 30%	<b>WG1575467-2;</b> <b>WG1575467-3</b> Naphthalene LCS: 30%R; LCSD: 25%R  <b>WG1576793-2;</b> <b>WG1576793-3</b> 2-Methylnaphthalene LCSD: 156%R; RPD: 55%	<b>EB, FB, and TB Detections</b> • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where detected.  <b>Method Blank Detections</b> • No impact in associated samples where blank-detected compound result was ND. • Blank-detected compounds B qualified in associated samples where the result was within 10x blank detection level. • No impact in associated samples where result was 10x greater than blank detection level.  <b>Surrogates</b> • Target compounds associated with nitrobenzene-d5 ND in associated sample; no impact.  <b>MS/MSD</b> • Total Organic Carbon (Rep1), Total Organic Carbon (Rep2), and Total Organic Carbon (Average) 'T' qualified for suspected matrix interference in associated sample; indeterminate bias.  <b>Lab Dup</b> • Total Organic Carbon (Rep1) and Total Organic Carbon (Average) J qualified in associated sample PE-03_20211119; indeterminate bias.  <b>LCD/D</b> • Naphthalene J qualified in associated sample EB-05_20211117; ND, potential low bias. • 2-Methylnaphthalene ND in associated samples; no impact.
Alpha L2166673	SO	PAHs, PFAS, TOC, TS	-	-	-	-	<b>WG1584799-1</b> Naphthalene: 1.2 J ug/kg	None	None	<b>PE-01_12032021</b> Total Organic Carbon (Rep1): RPD 35%	None	<b>Method Blank Detections</b> • Naphthalene B qualified in associated sample PE-01_12032021; potential high bias.  <b>Lab Dup</b> • Total Organic Carbon (Rep1) and Total Organic Carbon (Average) J qualified in associated sample PE-01_12032021; indeterminate bias.
Alpha L2202048	SO	PFAS, TS	None	None (See Alpha L2162323)	<b>FB-01_20211115</b> PFPeA: 0.276 J ng/ (See Alpha L2162323)	<b>TB-1_11032021</b> PFNA: 1.02 J ng/l PFTeA: 0.249 J ng/l (See Alpha L2162323)	<b>WG1595577-1</b> PFTeA: 0.102 J ng/g PFHxDA: 0.198 J ng/g	None	None	None	None	<b>Field Duplicates (see Table 5, also L2162323 above)</b> • NEtFOSAA results for WL-02_20211110 and associated field duplicate were qualified because of RPDs greater than 50%.  <b>EB, FB, and TB Detections</b> • Blank-detected compounds B qualified in associated samples where detected.  <b>Method Blank Detections</b> • PFHxDA B qualified in associated sample where result was within 10x blank detection level.

**Abbreviations/Acronyms:**

Alpha = Alpha Analytical  
SO = soil  
EB = equipment rinse blank sample  
FB = field blank sample  
TB = trip blank sample  
PAHs = polycyclic aromatic hydrocarbons  
PFAS = per- and polyfluoroalkyl substances  
TOC = total organic carbon  
TS = total solids  
MS = matrix spike sample  
MSD = matrix spike duplicate sample  
LCS = laboratory control sample  
LCSD = laboratory control sample duplicate  
"- " = not applicable

**Notes:**

1. Data qualifications are reflected in Table 2 through Table 5. Refer to the analytical laboratory reports for details on laboratory batch QC.

**Table 9  
Recommended PFAS Background Statistics  
Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Chemical	Number of Detects	Number of Non-Detects	Maximum Detect (ng/g)	Maximum Non-Detect MDL (ng/g)	Percent Detect	Number of Potential Outliers	Potential Outliers	Significant Difference Between Urban and Non-Urban	Notes	Proposed UPL90, UTL90-95, and UTL95-95						Proposed UCL95				
										Potential Outliers Removed	Potential Parametric Fits	UPL and UTL Statistical Method	UPL90	UTL90-95	UTL95-95	Potential Outliers Removed	UCL Potential Parametric Fits	UCL Statistical Method	UCL95	
Perfluorobutanoic Acid (PFBA) [3]	50	13	0.717	0.035	79%	0	None	No		No	Lognormal	Logged KM	0.231	0.398	0.431	No potential outliers.	Lognormal	KM H-UCL	0.137	
Perfluoropentanoic Acid (PFPeA) [4]	22	41	1.58	0.071	35%	2	CU-02, KE-01	No		No	None	Nonparametric	0.143	1.02	1.02	Yes	None	KM (Chebyshev)	0.098	
Perfluorohexanoic Acid (PFHxA) [5]	22	41	13.7	0.081	35%	1	PI-01	No		No	None	Nonparametric	0.161	1.49	1.49	Yes	None	KM (Chebyshev)	0.219	
Perfluoroheptanoic Acid (PFHpA) [6]	27	36	1.62	0.165	43%	1	KE-01	No		No	None	Nonparametric	0.191	0.246	0.246	Yes	None	Normal (t) KM	0.085	
Perfluorooctanoic Acid (PFOA) [7]	41	22	5.29	0.065	65%	1	KE-01	No		No	None	Nonparametric	0.565	2.18	2.18	Yes	None	KM (Chebyshev)	0.394	
Perfluorononanoic Acid (PFNA) [8]	30	33	2.02	0.115	48%	2	KE-01, SA-02	No		No	None	Nonparametric	0.264	1.93	1.93	Yes	Lognormal	KM H-UCL	0.145	
Perfluorodecanoic Acid (PFDA) [9] (urban)	11	20	3.24	0.245	35%	2	KE-01, SA-02	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	No	None	Nonparametric	0.236	3.24	3.24	Yes	Lognormal	KM H-UCL	0.094	
Perfluorodecanoic Acid (PFDA) [9] (non-urban)	4	28	0.164	0.106	13%	0	None	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing. The OX-03 value fell well within the distribution of PFDA concentrations for urban locations and was therefore not considered an outlier.	No	Normal; Gamma; Lognormal	Normal KM	0.096	0.109	0.112	No potential outliers.	Normal; Gamma; Lognormal	Normal (t) KM	0.078	
Perfluoroundecanoic Acid (PFUnA) [10]	22	41	1.93	0.171	35%	2	KE-01, SA-02	No		No	None	Nonparametric	0.160	0.944	0.944	Yes	Gamma; Lognormal	KM Approximate Gamma	0.073	
Perfluorododecanoic Acid (PFDoA) [11]	2	61	0.841	0.256	3%	3	KE-01, SA-02, AN-03	No	The only detected values (KE-01 and SA-02) were considered potential outliers. AN-03 was non-detect with an elevated MDL due to low percent solids.	No	None	Nonparametric selected because less than 4 detections.	0.108	0.610	0.610	Not calculated because less than 4 detections.				
Perfluorotridecanoic Acid (PFTrDA) [12]	0	63	-	0.748	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.328	0.328	0.328	Not calculated because less than 4 detections.			
Perfluorotetradecanoic Acid (PFTeA) [13]	4	59	0.277	0.198	6%	0	None	No		No	Normal; Gamma; Lognormal	Normal KM	0.098	0.116	0.119	No potential outliers.	Normal; Gamma; Lognormal	Normal (t) KM	0.066	
Perfluorohexadecanoic Acid (PFHxDA) [15]	3	60	0.170	0.439	5%	0	None	No		No	Normal; Lognormal	Nonparametric selected because less than 4 detections.	0.170	0.193	0.193	Not calculated because less than 4 detections.				
Perfluorooctadecanoic Acid (PFODA) [17]	0	63	-	0.626	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.274	0.274	0.274	Not calculated because less than 4 detections.			
Perfluorobutanesulfonic Acid (PFBS) [4S]	1	62	0.074	0.143	2%	0	None	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum detected value (i.e., detected value for CU-03).			0.074	0.074	0.074	Not calculated because less than 4 detections.			
Perfluoropentanesulfonic Acid (PFPeS) [5S]	0	63	-	0.306	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.134	0.134	0.134	Not calculated because less than 4 detections.			
Perfluorohexanesulfonic Acid (PFHxS) [6S]	0	63	-	0.221	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.097	0.097	0.097	Not calculated because less than 4 detections.			
Perfluoroheptanesulfonic Acid (PFHpS) [7S]	0	63	-	0.499	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.219	0.219	0.219	Not calculated because less than 4 detections.			
Perfluorooctanesulfonic Acid (PFOS) [8S] (urban)	25	6	4.35	0.166	81%	0	None	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	No	Gamma; Lognormal	Gamma KM	1.64	2.22	3.036	No potential outliers.	Gamma; Lognormal	KM Adjusted Gamma	1.17	
Perfluorooctanesulfonic Acid (PFOS) [8S] (non-urban)	20	12	5.32	0.2	63%	1	OX-03	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	No	None	Nonparametric	0.431	0.551	5.32	Yes	Normal; Gamma; Lognormal	Normal (t) KM	0.275	
Perfluorononanesulfonic Acid (PFNS) [9S]	0	63	-	1.09	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.480	0.480	0.480	Not calculated because less than 4 detections.			
Perfluorodecanesulfonic Acid (PFDS) [10S]	1	62	0.224	0.560	2%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.246	0.246	0.246	Not calculated because less than 4 detections.			
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0	63	-	0.236	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.104	0.104	0.104	Not calculated because less than 4 detections.			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0	63	-	0.657	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.288	0.288	0.288	Not calculated because less than 4 detections.			
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0	63	-	1.05	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.461	0.461	0.461	Not calculated because less than 4 detections.			
Perfluorooctanesulfonamide (PFOSA)	0	63	-	0.359	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.157	0.157	0.157	Not calculated because less than 4 detections.			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	3	60	6.23	0.415	5%	1	AN-02	No		No	Normal; Lognormal	Nonparametric selected because less than 4 detections.	0.132	0.415	0.415	Not calculated because less than 4 detections.				
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0	63	-	0.990	0%	0	None	No		No	Maximum non-detect MDL (i.e., MDL for SO-01).			0.990	0.990	0.990	Not calculated because less than 4 detections.			
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (HFPO-DA)	0	63	-	13.9	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			6.12	6.12	6.12	Not calculated because less than 4 detections.			
4,8-dioxa-3h-perfluorononanoic acid (ADONA)	0	63	-	0.151	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Yes	Maximum non-detect MDL (i.e., MDL for AN-04).			0.066	0.066	0.066	Not calculated because less than 4 detections.			

Notes:  
 [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
 [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons in PFASs are fluorinated.  
 ng/g = nanogram analyte per gram of soil  
 UPL90 = 90% Upper Prediction Limit  
 UTL90-95 = 90% Upper Tolerance Limit with 95% Coverage  
 UTL95-95 = 95% Upper Tolerance Limit with 95% Coverage  
 UCL95 = 95% Upper Confidence Limit of the Mean  
 KM = Kaplan-Meier method for handling non-detect data  
 HW = Hawkins-Wixley approximation for gamma distribution  
 WH = Wilson-Hilferty approximation for gamma distribution  
 H-UCL = UCL calculation based on Land's H-statistic for lognormal data  
 Chebyshev = UCL calculation based on Chebyshev inequality  
 Normal (t) = UCL calculation based on Student's t-distribution critical value  
 MDL = Method Detection Limit  
 Nonparametric Statistics are calculated from Higher Order Statistics (See ProUCL Version 5.1 Technical Guide Chapters 4 and 5)

**Table 10**  
**PFAS Background Statistics Without Potential Outliers Removed**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Chemical	Number of Detects	Number of Non-Detects	Maximum Detect (ng/g)	Maximum Non-Detect MDL (ng/g)	Percent Detect	Number of Potential Outliers	Potential Outliers	Significant Difference Between Urban and Non-Urban	Notes	Background Statistics Without Potential Outliers Removed (ng/g)						
										Potential Parametric Fits	UPL and UTL Statistical Method	UPL90	UTL90-95	UTL95-95	UCL Statistical Method	UCL95
Perfluorobutanoic Acid (PFBA) [3]	50	13	0.717	0.035	79%	0	None	No		Lognormal	Logged KM	0.231	0.398	0.431	KM H-UCL	0.137
Perfluoropentanoic Acid (PFPeA) [4]	22	41	1.58	0.071	35%	2	CU-02, KE-01	No		None	Nonparametric	0.143	1.02	1.02	KM (Chebyshev)	0.234
Perfluorohexanoic Acid (PFHxA) [5]	22	41	13.7	0.081	35%	1	PI-01	No		None	Nonparametric	0.161	1.49	1.49	KM (Chebyshev)	1.28
Perfluoroheptanoic Acid (PFHpA) [6]	27	36	1.62	0.165	43%	1	KE-01	No		None	Nonparametric	0.191	0.246	0.246	KM (Chebyshev)	0.210
Perfluorooctanoic Acid (PFOA) [7]	41	22	5.29	0.065	65%	1	KE-01	No		None	Nonparametric	0.565	2.18	2.18	KM (Chebyshev)	0.682
Perfluorononanoic Acid (PFNA) [8]	30	33	2.02	0.115	48%	2	KE-01, SA-02	No		None	Nonparametric	0.264	1.93	1.93	KM (Chebyshev)	0.386
Perfluorodecanoic Acid (PFDA) [9] (urban)	11	20	3.24	0.245	35%	2	KE-01, SA-02	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	None	Nonparametric	0.236	3.24	3.24	KM (Chebyshev)	0.923
Perfluorodecanoic Acid (PFDA) [9] (non-urban)	4	28	0.164	0.106	13%	0	None	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing. The OX-03 value fell well within the distribution of PFDA concentrations for urban locations and was therefore not considered an outlier.	Normal; Gamma; Lognormal	Normal KM	0.096	0.109	0.112	Normal (t) KM	0.078
Perfluoroundecanoic Acid (PFUnA) [10]	22	41	1.93	0.171	35%	2	KE-01, SA-02	No		None	Nonparametric	0.160	0.944	0.944	KM (Chebyshev)	0.253
Perfluorododecanoic Acid (PFDoA) [11]	2	61	0.841	0.256	3%	3	KE-01, SA-02, AN-03	No	The only detected values (KE-01 and SA-02) were considered potential outliers. AN-03 was non-detect with an elevated MDL due to low percent solids.	None	Nonparametric selected because less than 4 detections.	0.108	0.610	0.610	Not calculated because less than 4 detections.	-
Perfluorotridecanoic Acid (PFTrDA) [12]	0	63	-	0.748	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.748	0.748		Not calculated because less than 4 detections.	-
Perfluorotetradecanoic Acid (PFTeA) [13]	4	59	0.277	0.198	6%	0	None	No		Normal; Gamma; Lognormal	Normal KM	0.098	0.116	0.119	Normal (t) KM	0.066
Perfluorohexadecanoic Acid (PFHxDA) [15]	3	60	0.170	0.439	5%	0	None	No		Normal; Lognormal	Nonparametric selected because less than 4 detections.	0.17	0.193	0.193	Not calculated because less than 4 detections.	-
Perfluorooctadecanoic Acid (PFODA) [17]	0	63	-	0.626	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.626	0.626	0.626	Not calculated because less than 4 detections.	-
Perfluorobutanesulfonic Acid (PFBS) [4S]	1	62	0.074	0.143	2%	0	None	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.143	0.143	0.143	Not calculated because less than 4 detections.	-
Perfluoropentanesulfonic Acid (PFPeS) [5S]	0	63	-	0.306	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.306	0.306	0.306	Not calculated because less than 4 detections.	-
Perfluorohexanesulfonic Acid (PFHxS) [6S]	0	63	-	0.221	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.221	0.221	0.221	Not calculated because less than 4 detections.	-
Perfluoroheptanesulfonic Acid (PFHpS) [7S]	0	63	-	0.499	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.499	0.499	0.499	Not calculated because less than 4 detections.	-
Perfluorooctanesulfonic Acid (PFOS) [8S] (urban)	25	6	4.35	0.166	81%	0	None	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	Gamma; Lognormal	Gamma KM	1.66 (WH); 1.64 (HW); Use: 1.64	2.22 (WH); 2.25 (HW); Use: 2.22	2.924 (WH); 3.036 (HW); Use: 3.036	KM Adjusted Gamma	1.17
Perfluorooctanesulfonic Acid (PFOS) [8S] (non-urban)	20	12	5.32	0.2	63%	1	OX-03	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	None	Nonparametric	0.431	0.551	5.32	KM (Chebyshev)	1.10
Perfluorononanesulfonic Acid (PFNS) [9S]	0	63	-	1.09	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		1.09	1.09	1.09	Not calculated because less than 4 detections.	-
Perfluorodecanesulfonic Acid (PFDS) [10S]	1	62	0.224	0.560	2%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.56	0.56	0.56	Not calculated because less than 4 detections.	-
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0	63	-	0.236	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.236	0.236	0.236	Not calculated because less than 4 detections.	-
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0	63	-	0.657	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.657	0.657	0.657	Not calculated because less than 4 detections.	-
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0	63	-	1.05	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		1.05	1.05	1.05	Not calculated because less than 4 detections.	-
Perfluorooctanesulfonamide (PFOSA)	0	63	-	0.359	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.359	0.359	0.359	Not calculated because less than 4 detections.	-
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NETFOSAA)	3	60	6.23	0.415	5%	1	AN-02	No		Normal; Lognormal	Nonparametric selected because less than 4 detections.	0.132	0.415	0.415	Not calculated because less than 4 detections.	-
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0	63	-	0.990	0%	0	None	No		Maximum non-detect MDL (i.e., MDL for SO-01).		0.99	0.99	0.99	Not calculated because less than 4 detections.	-
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (HFPO-DA)	0	63	-	13.9	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		13.9	13.9	13.9	Not calculated because less than 4 detections.	-
4,8-dioxa-3h-perfluorononanoic acid (ADONA)	0	63	-	0.151	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-03).		0.151	0.151	0.151	Not calculated because less than 4 detections.	-

Notes:  
[3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
[4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSAs). All of the carbons in PFSAs are fluorinated.  
ng/g = nanogram analyte per gram of soil  
UPL90 = 90% Upper Prediction Limit  
UTL90-95 = 90% Upper Tolerance Limit with 95% Coverage  
UTL95-95 = 95% Upper Tolerance Limit with 95% Coverage  
UCL95 = 95% Upper Confidence Limit of the Mean  
KM = Kaplan-Meier method for handling non-detect data  
HW = Hawkins-Wixley approximation for gamma distribution  
WH = Wilson-Hilferty approximation for gamma distribution  
H-UCL = UCL calculation based on Land's H-statistic for lognormal data  
Chebyshev = UCL calculation based on Chebyshev inequality  
Normal (t) = UCL calculation based on Student's t-distribution critical value  
MDL = Method Detection Limit  
Nonparametric Statistics are calculated from Higher Order Statistics (See ProUCL Version 5.1 Technical Guide Chapters 4 and 5)

**Table 11**  
**PFAS Background Statistics With Potential Outliers Removed**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Chemical	Number of Detects	Number of Non-Detects	Maximum Detect (ng/g)	Maximum Non-Detect MDL (ng/g)	Percent Detect	Number of Potential Outliers	Potential Outliers	Significant Difference Between Urban and Non-Urban	Notes	Background Statistics With Potential Outliers Removed (ng/g)						
										Potential Parametric Fits	UPL and UTL Statistical Method	UPL90	UTL90-95	UTL95-95	UCL Statistical Method	UCL95
Perfluorobutanoic Acid (PFBA) [3]	50	13	0.717	0.035	79%	0	None	No		No potential outliers identified.						
Perfluoropentanoic Acid (PFPeA) [4]	22	41	1.58	0.071	35%	2	CU-02, KE-01	No		None	Nonparametric	0.0922	0.298	0.298	KM (Chebyshev)	0.098
Perfluorohexanoic Acid (PFHxA) [5]	22	41	13.7	0.081	35%	1	PI-01	No		None	Nonparametric	0.123	0.656	0.656	KM (Chebyshev)	0.219
Perfluoroheptanoic Acid (PFHpA) [6]	27	36	1.62	0.165	43%	1	KE-01	No		None	Nonparametric	0.167	0.237	0.237	Normal (t) KM	0.085
Perfluorooctanoic Acid (PFOA) [7]	41	22	5.29	0.065	65%	1	KE-01	No		None	Nonparametric	0.514	1.68	1.68	KM (Chebyshev)	0.394
Perfluorononanoic Acid (PFNA) [8]	30	33	2.02	0.115	48%	2	KE-01, SA-02	No		Lognormal	Logged KM	0.223	0.313	0.329	KM H-UCL	0.145
Perfluorodecanoic Acid (PFDA) [9] (urban)	11	20	3.24	0.245	35%	2	KE-01, SA-02	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	Lognormal	Logged KM	0.122	0.155	0.163	KM H-UCL	0.094
Perfluorodecanoic Acid (PFDA) [9] (non-urban)	4	28	0.164	0.106	13%	0	None	Yes	PFDA urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing. The OX-03 value fell well within the distribution of PFDA concentrations for urban locations and was therefore not considered an outlier.	No potential outliers identified.						
Perfluoroundecanoic Acid (PFUnA) [10]	22	41	1.93	0.171	35%	2	KE-01, SA-02	No		Gamma; Lognormal	Gamma KM	0.102 (WH); 0.101 (HW); Use: 0.101	0.114 (WH); 0.113 (HW); Use: 0.113	0.131 (WH); 0.131 (HW); Use: 0.131	KM Approximate Gamma	0.073
Perfluorododecanoic Acid (PFDoA) [11]	2	61	0.841	0.256	3%	3	KE-01, SA-02, AN-03	No	The only detected values (KE-01 and SA-02) were considered potential outliers. AN-03 was non-detect with an elevated MDL due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). Not calculated because less than 4 detections. -						
Perfluorotridecanoic Acid (PFTrDA) [12]	0	63	-	0.748	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.328 0.328 0.328 Not calculated because less than 4 detections. -						
Perfluorotetradecanoic Acid (PFTeA) [13]	4	59	0.277	0.198	6%	0	None	No		No potential outliers identified. - - - No potential outliers identified. -						
Perfluorohexadecanoic Acid (PFHxDA) [15]	3	60	0.170	0.439	5%	0	None	No		No potential outliers identified. - - - No potential outliers identified. -						
Perfluorooctadecanoic Acid (PFODA) [17]	0	63	-	0.626	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.274 0.274 0.274 Not calculated because less than 4 detections. -						
Perfluorobutanesulfonic Acid (PFBS) [4S]	1	62	0.074	0.143	2%	0	None	No	Elevated MDL for AN-03 due to low percent solids.	Maximum detected value (i.e., detected value for CU-03). 0.074 0.074 0.074 Not calculated because less than 4 detections. -						
Perfluoropentanesulfonic Acid (PFPeS) [5S]	0	63	-	0.306	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.134 0.134 0.134 Not calculated because less than 4 detections. -						
Perfluorohexanesulfonic Acid (PFHxS) [6S]	0	63	-	0.221	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.097 0.097 0.097 Not calculated because less than 4 detections. -						
Perfluoroheptanesulfonic Acid (PFHpS) [7S]	0	63	-	0.499	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.219 0.219 0.219 Not calculated because less than 4 detections. -						
Perfluorooctanesulfonic Acid (PFOS) [8S] (urban)	25	6	4.35	0.166	81%	0	None	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	No potential outliers identified. - - - No potential outliers identified. -						
Perfluorooctanesulfonic Acid (PFOS) [8S] (non-urban)	20	12	5.32	0.2	63%	1	OX-03	Yes	PFOS urban and non-urban sample sets split based on results of two-tailed two-sample hypothesis testing.	Normal; Gamma; Lognormal	Normal KM	0.395	0.48	0.496	Normal (t) KM	0.275
Perfluorononanesulfonic Acid (PFNS) [9S]	0	63	-	1.09	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.480 0.480 0.480 Not calculated because less than 4 detections. -						
Perfluorodecanesulfonic Acid (PFDS) [10S]	1	62	0.224	0.560	2%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.246 0.246 0.246 Not calculated because less than 4 detections. -						
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0	63	-	0.236	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.104 0.104 0.104 Not calculated because less than 4 detections. -						
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0	63	-	0.657	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.288 0.288 0.288 Not calculated because less than 4 detections. -						
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0	63	-	1.05	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.461 0.461 0.461 Not calculated because less than 4 detections. -						
Perfluorooctanesulfonamide (PFOSA)	0	63	-	0.359	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.157 0.157 0.157 Not calculated because less than 4 detections. -						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3	60	6.23	0.415	5%	1	AN-02	No		None	Nonparametric	0.130	0.309	0.309	Not calculated because less than 4 detections.	-
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0	63	-	0.990	0%	0	None	No		No potential outliers identified. - - - No potential outliers identified. -						
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid (HFPO-DA)	0	63	-	13.9	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 6.12 6.12 6.12 Not calculated because less than 4 detections. -						
4,8-dioxa-3h-perfluorononanoic acid (ADONA)	0	63	-	0.151	0%	1	AN-03	No	Elevated MDL for AN-03 due to low percent solids.	Maximum non-detect MDL (i.e., MDL for AN-04). 0.066 0.066 0.066 Not calculated because less than 4 detections. -						

Notes:  
[3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
[4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons in PFASs are fluorinated.  
ng/g = nanogram analyte per gram of soil  
UPL90 = 90% Upper Prediction Limit  
UTL90-95 = 90% Upper Tolerance Limit with 95% Coverage  
UTL95-95 = 95% Upper Tolerance Limit with 95% Coverage  
UCL95 = 95% Upper Confidence Limit of the Mean  
KM = Kaplan-Meier method for handling non-detect data  
HW = Hawkins-Wixley approximation for gamma distribution  
WH = Wilson-Hilferty approximation for gamma distribution  
H-UCL = UCL calculation based on Land's H-statistic for lognormal data  
Chebyshev = UCL calculation based on Chebyshev inequality  
Normal (t) = UCL calculation based on Student's t-distribution critical value  
MDL = Method Detection Limit  
Nonparametric Statistics are calculated from Higher Order Statistics (See ProUCL Version 5.1 Technical Guide Chapters 4 and 5)

**Table 12**  
**Correlations Among PFAS, PAHs, and Soil Parameters**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

	Percent detection	Kendall's Tau for Correlations Among PFAS									
		Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorooctanesulfonic Acid (PFOS) [8S]	
Perfluorobutanoic Acid (PFBA) [3]	79%	<b>0.95</b>	<b>0.41</b>	<b>0.34</b>	<b>0.40</b>	<b>0.47</b>	<b>0.34</b>	0.09	0.13	<b>0.35</b>	
Perfluoropentanoic Acid (PFPeA) [4]	35%	<b>0.41</b>	<b>0.57</b>	<b>0.41</b>	<b>0.40</b>	<b>0.41</b>	<b>0.30</b>	0.15	0.15	<b>0.39</b>	
Perfluorohexanoic Acid (PFHxA) [5]	35%	<b>0.34</b>	<b>0.41</b>	<b>0.56</b>	<b>0.37</b>	<b>0.40</b>	<b>0.30</b>	0.13	0.11	<b>0.30</b>	
Perfluoroheptanoic Acid (PFHpA) [6]	43%	<b>0.40</b>	<b>0.40</b>	<b>0.37</b>	<b>0.65</b>	<b>0.52</b>	<b>0.38</b>	<b>0.22</b>	<b>0.20</b>	<b>0.40</b>	
Perfluorooctanoic Acid (PFOA) [7]	65%	<b>0.47</b>	<b>0.41</b>	<b>0.40</b>	<b>0.52</b>	<b>0.87</b>	<b>0.47</b>	<b>0.22</b>	<b>0.20</b>	<b>0.48</b>	
Perfluorononanoic Acid (PFNA) [8]	48%	<b>0.34</b>	<b>0.30</b>	<b>0.30</b>	<b>0.38</b>	<b>0.47</b>	<b>0.72</b>	<b>0.23</b>	<b>0.25</b>	<b>0.46</b>	
Perfluorodecanoic Acid (PFDA) [9]	24%	0.09	0.15	0.13	<b>0.22</b>	<b>0.22</b>	<b>0.23</b>	<b>0.39</b>	<b>0.30</b>	<b>0.33</b>	
Perfluoroundecanoic Acid (PFUnA) [10]	35%	0.13	0.15	0.11	<b>0.20</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>	<b>0.54</b>	<b>0.35</b>	
Perfluorooctanesulfonic Acid (PFOS) [8S]	71%	<b>0.35</b>	<b>0.39</b>	<b>0.30</b>	<b>0.40</b>	<b>0.48</b>	<b>0.46</b>	<b>0.33</b>	<b>0.35</b>	<b>0.91</b>	

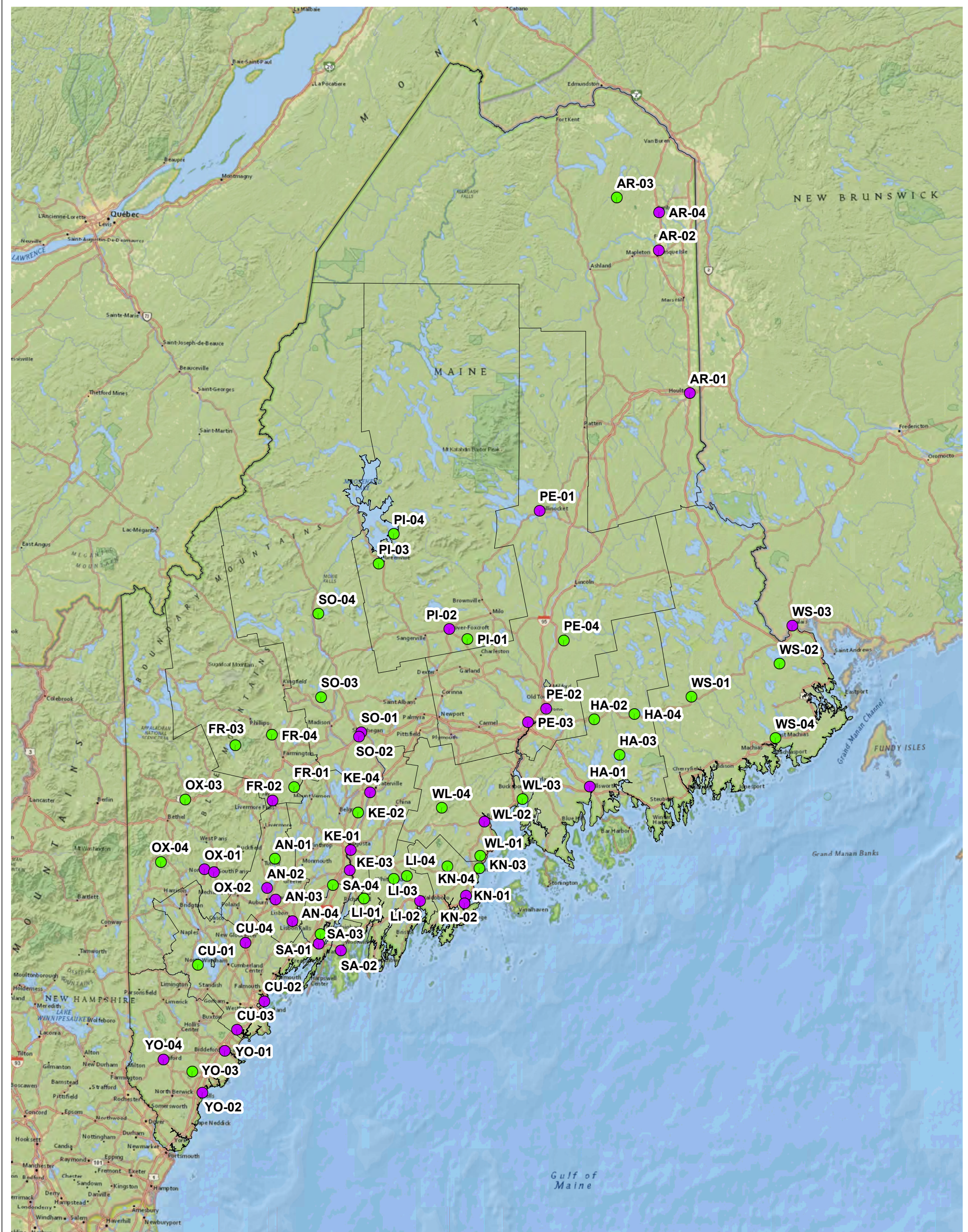
	Percent detection	Kendall's Tau for PFAS and PAH Correlations																		
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene (1-)	Methylnaphthalene (2-)	Naphthalene	Phenanthrene	Pyrene	
Perfluorobutanoic Acid (PFBA) [3]	79%	0.07	<b>0.18</b>	<b>0.18</b>	<b>0.19</b>	<b>0.21</b>	<b>0.22</b>	<b>0.20</b>	<b>0.21</b>	<b>0.22</b>	0.13	<b>0.20</b>	0.16	<b>0.20</b>	0.11	0.07	0.14	<b>0.20</b>	<b>0.21</b>	
Perfluoropentanoic Acid (PFPeA) [4]	35%	0.07	0.14	0.15	0.15	0.16	0.16	0.16	<b>0.17</b>	<b>0.17</b>	0.12	0.17	0.14	0.16	0.11	0.04	0.10	<b>0.17</b>	0.16	
Perfluorohexanoic Acid (PFHxA) [5]	35%	0.04	0.07	0.07	0.09	0.09	0.09	0.09	0.10	0.10	0.06	0.09	0.09	0.09	0.11	0.04	0.08	0.10	0.09	
Perfluoroheptanoic Acid (PFHpA) [6]	43%	0.07	0.10	0.10	0.12	0.12	0.12	0.12	0.13	0.12	0.11	0.12	0.08	0.12	0.06	0.01	0.04	0.12	0.12	
Perfluorooctanoic Acid (PFOA) [7]	65%	0.08	0.11	0.10	0.13	0.14	0.14	0.13	0.15	0.15	0.09	0.14	0.10	0.14	0.12	0.07	0.08	0.14	0.14	
Perfluorononanoic Acid (PFNA) [8]	48%	-0.01	0.05	0.05	0.06	0.07	0.08	0.06	0.09	0.08	0.02	0.08	0.03	0.08	0.02	-0.01	0.04	0.07	0.06	
Perfluorodecanoic Acid (PFDA) [9]	24%	0.09	0.09	0.10	0.11	0.12	0.12	0.12	0.13	0.13	0.12	0.12	0.08	0.13	0.06	0.07	0.09	0.11	0.12	
Perfluoroundecanoic Acid (PFUnA) [10]	35%	0.06	0.08	0.10	0.11	0.12	0.12	0.12	0.13	0.13	0.10	0.13	0.06	0.12	0.03	0.06	0.06	0.11	0.12	
Perfluorooctanesulfonic Acid (PFOS) [8S]	71%	0.15	<b>0.26</b>	<b>0.26</b>	<b>0.29</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.32</b>	<b>0.31</b>	<b>0.24</b>	<b>0.30</b>	<b>0.22</b>	<b>0.30</b>	<b>0.18</b>	0.15	<b>0.21</b>	<b>0.28</b>	<b>0.30</b>	

**Notes:**

- See previous tables for additional notes.
  - Only analytes with a 10 percent detection frequency or greater were included in this table.
  - Kendall's Tau correlation coefficients and p-values were calculated using the 'cenken' function from the R statistical package 'NADA: Nondetects and Data Analysis for Environmental Data', authored and maintained by Lopaka Lee. P-values were evaluated using a significance level of 0.05, and significant correlations are indicated with bold text and outline.
- Kendall's Tau is an indicator of nonparametric, monotonic trend (i.e., not necessarily linear). The value ranges from -1 to 1. A value of 1 indicates a consistent positive correlation (dark red), a value of 0 indicates no correlation (white), and a value of -1 indicates a consistent negative correlation (dark blue). Because of non-detects present in the dataset, the correlations between the same analyte approach, but do not reach, a Kendall's Tau of 1. Non-detect values were accounted for in the calculation of Kendall's Tau and p-values, but greater proportions of non-detects in the data reduce the ability to detect potential underlying correlations.
3. [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.
- [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSAs). All of the carbons in PFSAs are fluorinated.

	Percent detection	Kendall's Tau for PFAS and Soil Parameter Correlations																			
		Metals (< 2 mm size fraction)											Other Soil Parameters (< 2 mm fraction)						Other		
		Aluminum (via ICP-OES)	Boron (via ICP-OES)	Calcium (via ICP-OES)	Copper (via ICP-OES)	Iron (via ICP-OES)	Magnesium (via ICP-OES)	Manganese (via ICP-OES)	Potassium (via ICP-OES)	Sodium (via ICP-OES)	Zinc (via ICP-OES)	Cation Exchange Capacity (via ICP-OES)	Phosphorus (via colorimetric flow injection analysis)	Sulfur (via ICP-OES)	pH (distilled water and Mehlich lime buffer)	% Organic Matter (loss on ignition at 375 degrees Celcius)	% Total Clay (< 2 mm fraction)	% Total Sand (< 2 mm fraction)	% Total Silt (< 2 mm fraction)	Total Organic Carbon (Average)	Total Solids
Perfluorobutanoic Acid (PFBA) [3]	79%	<b>0.24</b>	0.13	0.10	-0.08	0.06	0.09	0.02	<b>0.23</b>	0.12	<b>0.30</b>	<b>0.20</b>	<b>0.21</b>	<b>0.34</b>	-0.16	<b>0.46</b>	<b>0.17</b>	<b>-0.28</b>	<b>0.30</b>	<b>0.40</b>	<b>-0.39</b>
Perfluoropentanoic Acid (PFPeA) [4]	35%	0.12	0.14	0.06	0.03	0.12	0.05	0.04	0.11	0.13	<b>0.17</b>	0.12	0.13	<b>0.26</b>	-0.07	<b>0.28</b>	0.16	<b>-0.24</b>	<b>0.25</b>	<b>0.25</b>	<b>-0.32</b>
Perfluorohexanoic Acid (PFHxA) [5]	35%	0.12	0.14	0.04	0.06	0.07	0.02	-0.04	0.08	0.11	0.08	0.08	0.10	<b>0.27</b>	-0.05	<b>0.20</b>	0.12	<b>-0.22</b>	<b>0.24</b>	<b>0.18</b>	<b>-0.30</b>
Perfluoroheptanoic Acid (PFHpA) [6]	43%	<b>0.23</b>	0.10	0.00	0.08	0.10	-0.03	0.01	0.10	0.06	0.14	0.05	0.11	<b>0.31</b>	-0.09	<b>0.24</b>	0.16	<b>-0.26</b>	<b>0.27</b>	<b>0.25</b>	<b>-0.26</b>
Perfluorooctanoic Acid (PFOA) [7]	65%	<b>0.29</b>	0.14	0.00	0.04	0.15	0.00	-0.02	0.16	0.14	0.10	0.07	0.10	<b>0.48</b>	-0.14	<b>0.35</b>	0.17	<b>-0.30</b>	<b>0.32</b>	<b>0.34</b>	<b>-0.39</b>
Perfluorononanoic Acid (PFNA) [8]	48%	<b>0.21</b>	0.15	0.04	0.06	0.12	0.00	0.09	<b>0.21</b>	0.16	0.10	0.12	0.09	<b>0.40</b>	-0.11	<b>0.33</b>	0.13	<b>-0.28</b>	<b>0.32</b>	<b>0.35</b>	<b>-0.33</b>
Perfluorodecanoic Acid (PFDA) [9]	24%	0.04	0.12	0.07	0.08	0.00	0.05	0.13	0.03	0.07	0.13	0.07	0.08	0.13	0.02	<b>0.13</b>	0.10	-0.11	0.12	0.15	-0.10
Perfluoroundecanoic Acid (PFUnA) [10]	35%	0.11	0.08	0.06	0.09	0.09	0.04	<b>0.18</b>	0.11	0.14	<b>0.21</b>	0.06	0.05	<b>0.20</b>	-0.01	<b>0.20</b>	0.07	-0.09	0.11	<b>0.23</b>	-0.12
Perfluorooctanesulfonic Acid (PFOS) [8S]	71%	0.14	<b>0.22</b>	0.14	0.09	0.12	0.09	0.11	0.14	<b>0.22</b>	<b>0.31</b>	<b>0.20</b>	0.10	<b>0.34</b>	-0.07	<b>0.32</b>	<b>0.20</b>	<b>-0.24</b>	<b>0.25</b>	<b>0.32</b>	<b>-0.30</b>

## FIGURES



**Legend**

- Non-Urban Sample Location
- Urban Sample Location
- Maine County Boundaries (Coastal Islands Not Shown)

**Figure Narrative**

This figure shows sampled locations for the study of background levels of per- and polyfluoroalkyl substances (PFAS) and polycyclic aromatic hydrocarbons (PAHs) in Maine shallow soils.

**Notes**

1. Service Layer Credits: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Figure 1

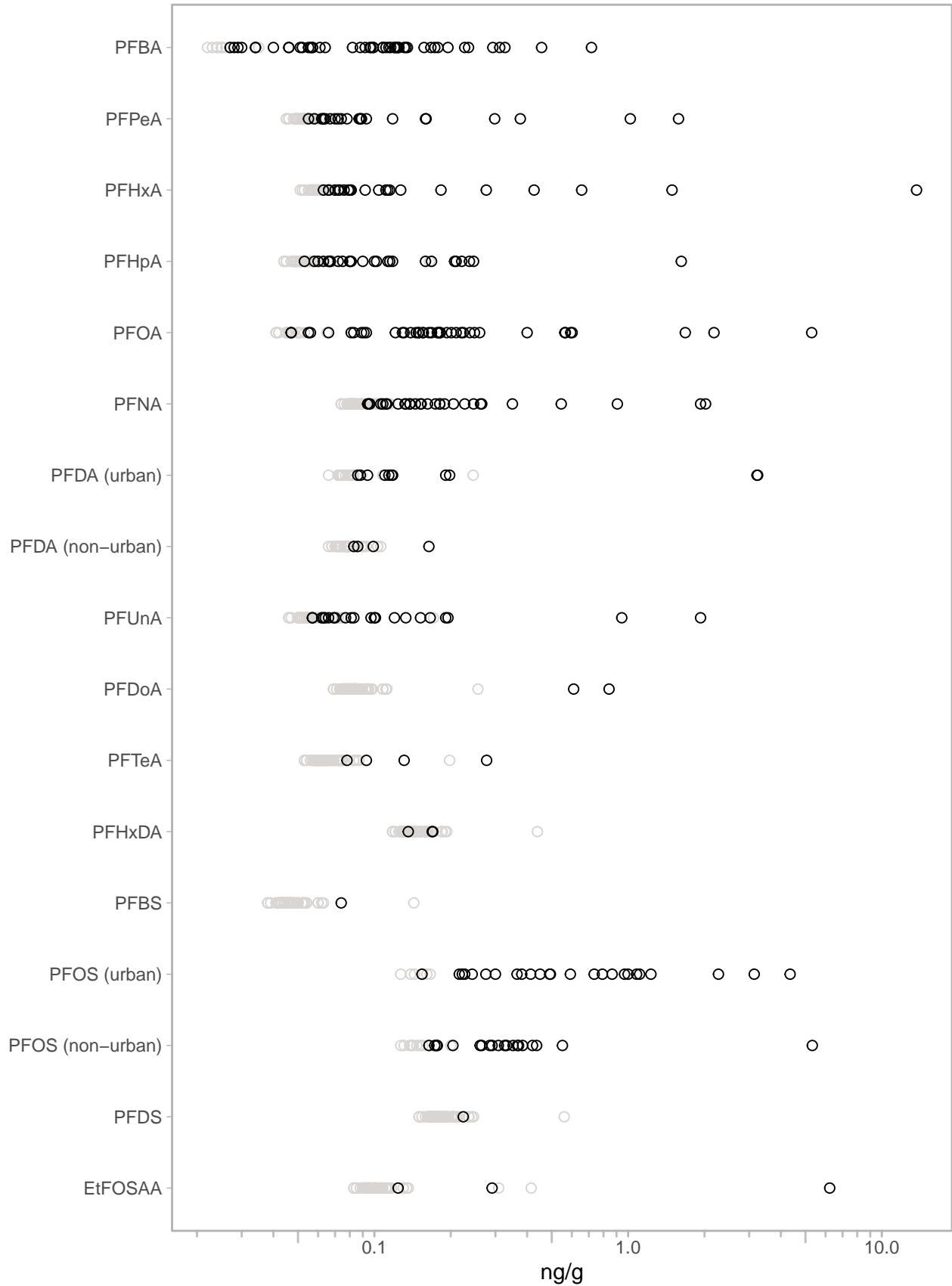
**Sample Locations**

Background Levels of PFAS and PAHs in Maine Shallow Soils

Maine Department of Environmental Protection  
Maine, USA

Drawn By:	M. Fuerte
Designed By:	M. Fuerte
Reviewed By:	H. Roakes
Project No:	5060.00
Date:	February, 2022

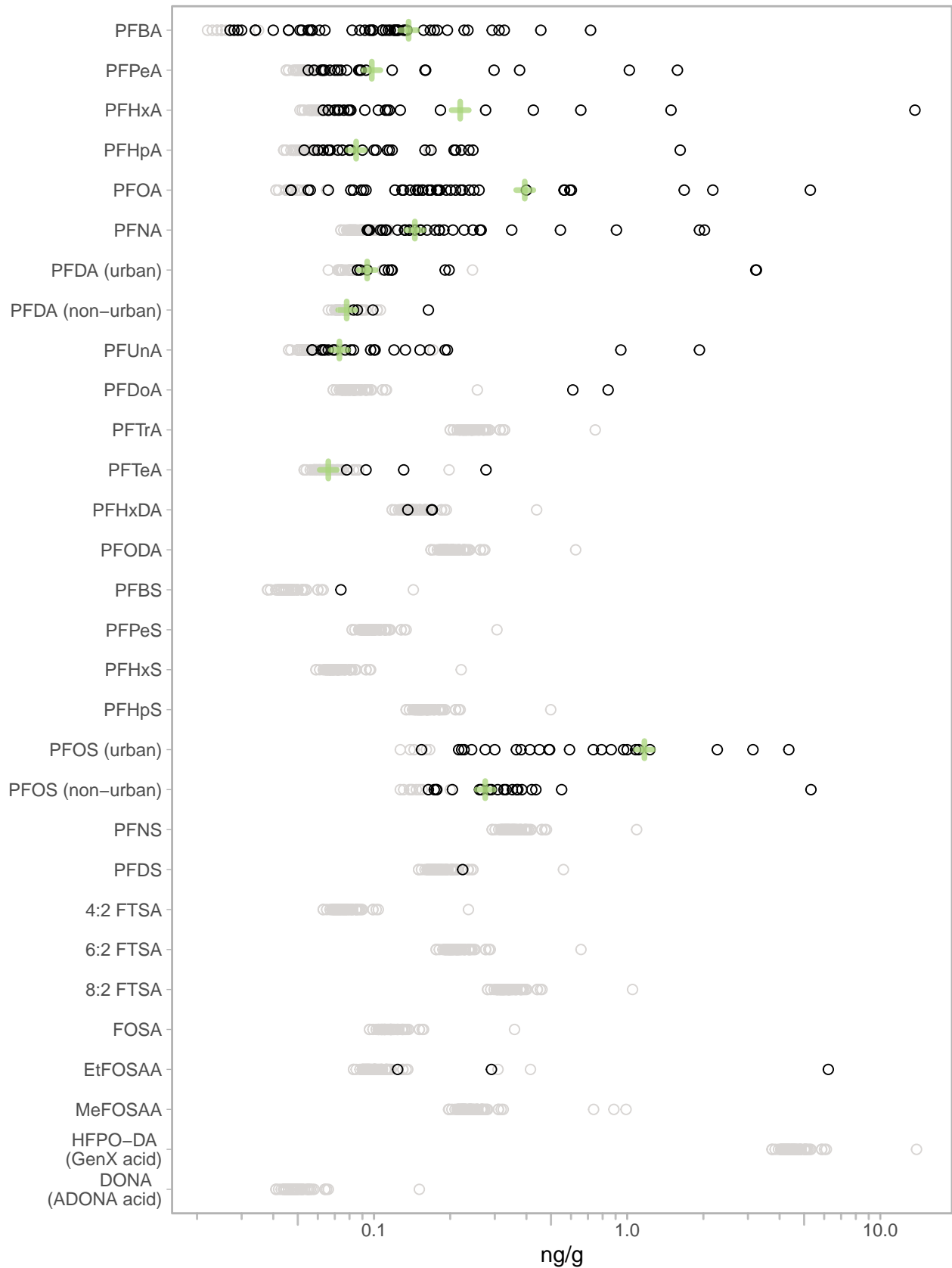
Figure 2 – PFAS Concentration Distributions  
 Background Levels of PFAS and PAHs in Maine Shallow Soils



Notes:  
 Only PFAS with one or more detection are plotted.  
 Non-detect values are plotted in gray at the method detection limit.

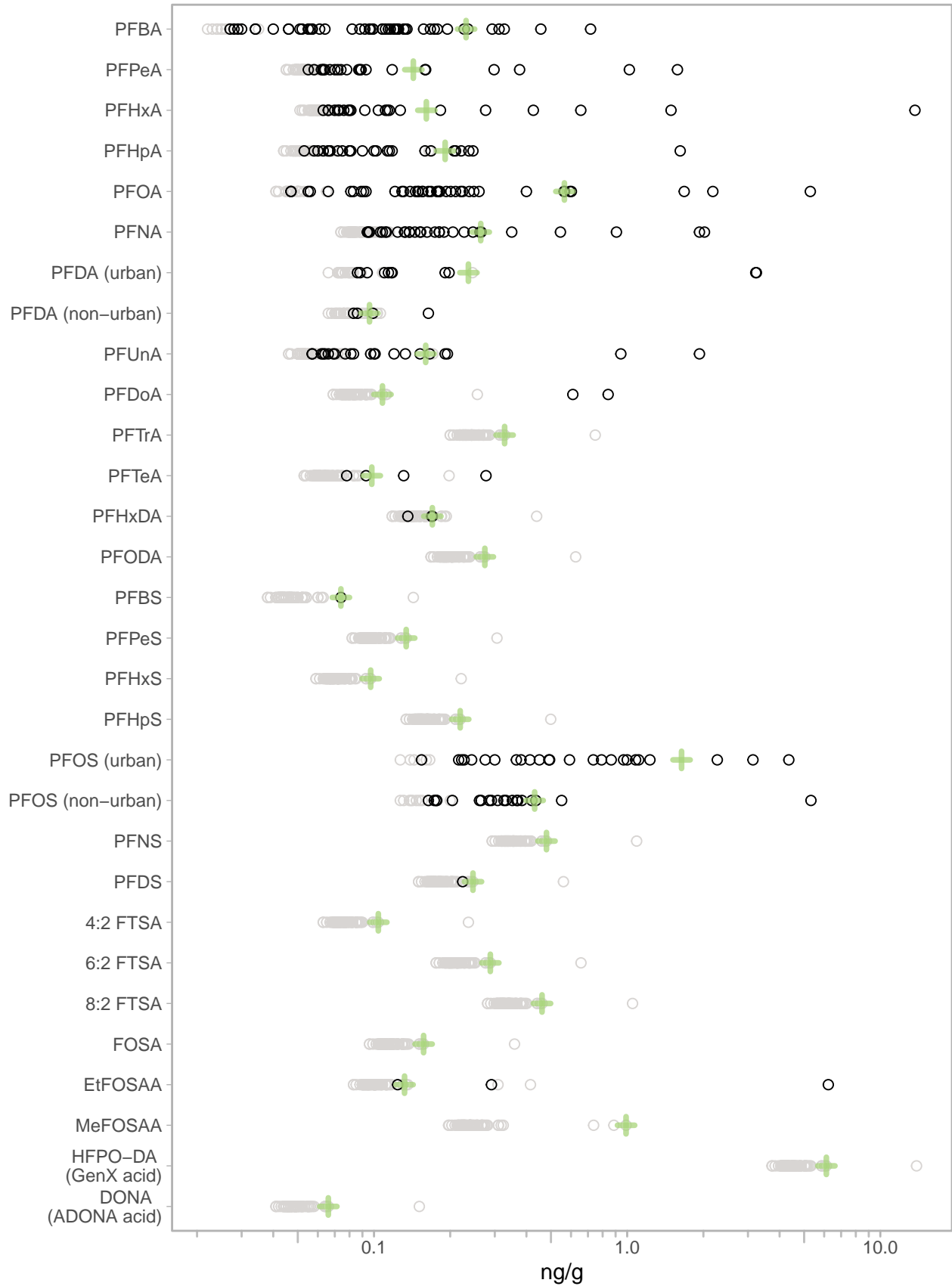


Figure 3 – UCL95 and PFAS Concentration Distributions  
 Background Levels of PFAS and PAHs in Maine Shallow Soils



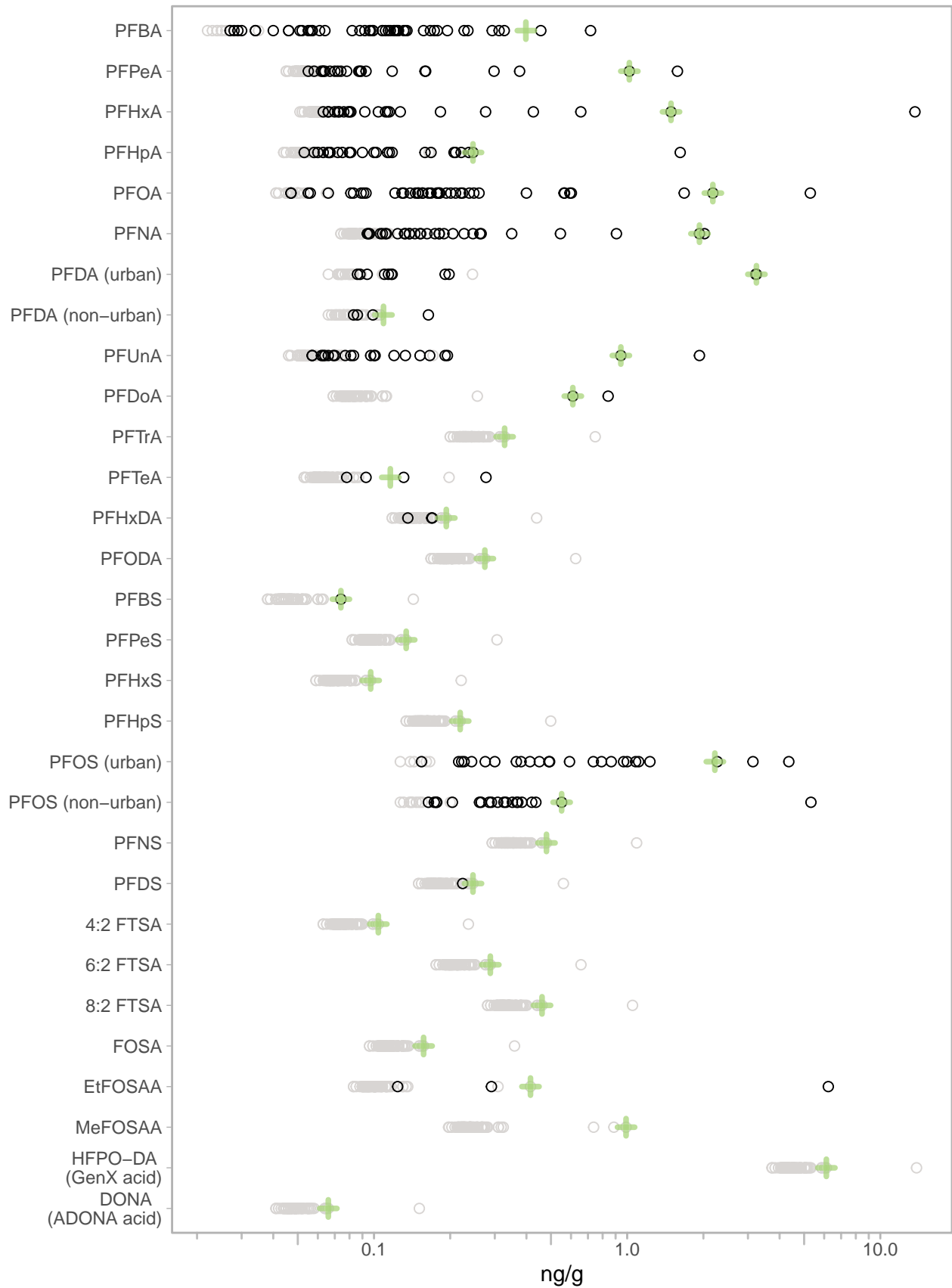
Notes:  
 95% Upper Confidence Limits (UCL95) are indicated in green.  
 UCL95 not calculated for PFAS with less than 4 detections.  
 Non-detect values are plotted in gray at the method detection limit.

Figure 4 – UPL90 and PFAS Concentration Distributions  
Background Levels of PFAS and PAHs in Maine Shallow Soils



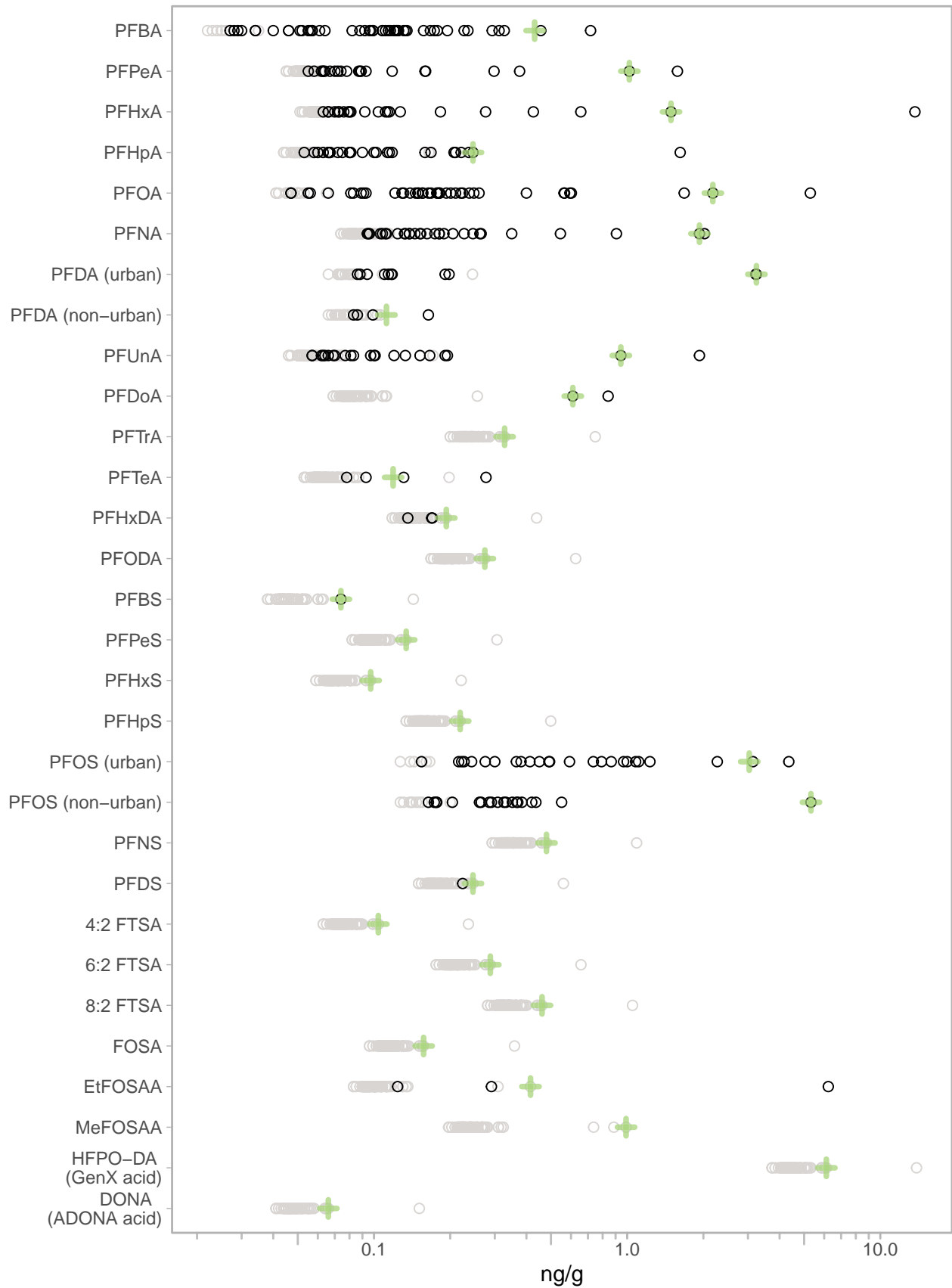
Notes:  
90% Upper Prediction Limits (UPL90) are indicated in green.  
Non-detect values are plotted in gray at the method detection limit.

Figure 5 – UTL90–95 and PFAS Concentration Distributions  
 Background Levels of PFAS and PAHs in Maine Shallow Soils



Notes:  
 90% Upper Tolerance Limits with 95% coverage (UTL90–95) are indicated in green.  
 Non-detect values are plotted in gray at the method detection limit.

Figure 6 – UTL95–95 and PFAS Concentration Distributions  
Background Levels of PFAS and PAHs in Maine Shallow Soils



Notes:  
95% Upper Tolerance Limits with 95% coverage (UTL95–95) are indicated in green.  
Non-detect values are plotted in gray at the method detection limit.

**APPENDIX A**

**SAMPLING LOCATION SELECTION METHODS**

## APPENDIX A

### SAMPLING LOCATION SELECTION METHODS

Selection of sampling locations was guided by criteria set forth by the Maine Department of Environmental Protection. The basic criteria included:

- Sampling from both urban and non-urban areas;
- Coverage over a wide geographic region representing all of Maine’s counties; and
- Avoiding locations with known or suspected nearby potential sources of contamination.

Sample locations are summarized in Table 1 and shown on Figure 1. Sixty-four (64) sample locations were selected across the 16 Maine counties, with 4 locations per county. Sample coverage was evenly divided amongst designated urban and non-urban settings, with 32 samples in each category. Urban settings were defined as areas formally designated as “Urban Compact” by the Maine Department of Transportation (DOT) or “Urbanized Area” by the US Census Bureau.<sup>1</sup> For counties where an urban sampling location was not available based on the Maine DOT or US Census Bureau criteria, a sample location in the most population-dense city in the county was selected as a representative urban sample. At least one urban and one non-urban sample location were selected for each county.

A Graphical Information System (GIS) approach guided sample selection, along with consideration of site access. Data layers were obtained from the Maine Office of GIS and the Maine DEP website.<sup>2</sup> The “Maine Conserved Lands” inventory, as obtained from the Maine Office of GIS, was the primary source of properties considered for potential sample locations. The conserved lands are managed through legal or other means for the purpose of biological diversity preservation and other natural, recreational, and cultural uses, and these lands are in federal, state, municipal, and non-profit ownership with easements.

Conserved lands were screened for accessibility and nearby potential contaminant point sources according to the considerations and procedure outlined below.

- Locations were considered inaccessible if they were islands or areas where public DOT roads are absent (e.g., large portions of northwestern Maine).
- Buffers were placed on the following potential PFAS or PAH contaminant point sources:
  - DOT Roadways – 50 ft planar buffer
  - Railroads – 100 ft planar buffer
  - Fire Stations – 500 ft radial buffer

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<sup>1</sup> The US Census Bureau considers an Urbanized Area as “a continuously built-up area with a population of 50,000 or more.” Layers for US Census Bureau urbanized areas sourced from the 2018 Cartographic Boundary Files – Shapefile page (<https://www.census.gov/geographies/mapping-files/time-series/geo/carto-boundary-file.html>)

<sup>2</sup> Layer files sourced from the Maine Office of GIS GeoLibrary Data Catalog (<https://www.maine.gov/geolib/catalog.html>) and Maine Department of Environmental Protection (<https://www.maine.gov/dep/gis/datamaps/>)

- Armories – 500 ft radial buffer
- Airports – 3,000 ft radial buffer
- Closed Municipal Landfills – 3,000 ft radial buffer
- Bureau of Remediation and Waste Management Remediation Sites – 500 ft radial buffer
- Bureau of Remediation and Waste Management Above and Underground Storage Tanks – 500 ft radial buffer
- Combined Sewer Outfall – 500 ft radial buffer
- Pollutant Discharge Elimination Facility – 500 ft radial buffer
- Pollutant Discharge Elimination Outfall – 500 ft radial buffer
- Paper Mill or Waste Combustor (based on Google Earth queries) – 3,000 ft radial buffer

After potential sample locations were screened for accessibility and potential contaminant point source buffers were in place, sample locations were selected using the following criteria.

- As discussed above, overall sample coverage was evenly divided amongst designated urban and non-urban settings, with 32 samples in each category. For counties where an urban sampling location was not available based on the Maine DOT or US Census Bureau criteria, a sample location in the most population-dense community in the county was selected as a representative urban sample. At least one urban and one non-urban sample location were selected for each county.
- Locations were spaced at least 10,000 feet apart, and properties that provided greater spatial coverage were favored (i.e., locations not located near already selected locations). Locations with relatively convenient access from major transportation routes were also favored.
- Locations at conservation properties with state easement holders were favored, followed by conservation properties with local municipal easement holders; lastly, conservation properties with non-profit or private easement holders were selected. In some cases, local parks not identified as conserved land were proposed because there were not sufficient conservation lands in urban settings.
- Locations were screened using aerial imagery and Google Street View (where available) to confirm the absence of obvious nearby potential PFAS sources and to consider accessibility and suitability of potential sampling locations within a property (see field sample location selection discussion below).

Exceptions to the selection criteria are noted in Table 1, and they include several locations that were selected despite being within the specified buffer range for USTs or remediation sites. Those exceptions were typically made to meet the need for including urban locations.

At the time of sampling, field sampling personnel selected a sample location that met the following criteria.

- Safe and accessible.
- Outside of wetlands; perennial, intermittent, or ephemeral streams; or stormwater management features (e.g., swales or basins).
- Outside of areas apparently subject to recent disturbance (e.g., tilled soil, recent grass planting) or landscaping/agricultural treatments, such as mulches, soil amendments, fertilizer, pesticides, or herbicides.
- At least 50 feet from heavily trafficked roads.<sup>3</sup>

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<sup>3</sup> Discernible impacts of lead in soils near highways are reported to persist to distances of 30-50 m from roadways. See Filippelli, G. M., Laidlaw, M., Raftis, R., & Latimer, J. C. (2005). Urban lead poisoning and medical geology: An unfinished story. *GSA Today* **15**:4-11.



**APPENDIX B**  
**FIELD SAMPLING METHODS**

## **APPENDIX B**

### **FIELD SAMPLING METHODS**

Soil samples were collected according to the guidelines discussed in this appendix. Soil samples were classified and logged on-site by the field representative using a modified Burmister Soil Classification System. The shallow soil samples were collected using freshly gloved hands or a stainless-steel spade or scoop. For some locations, a steel spade was used to aid in cutting turf and loosening soil.

PFAS and PAHs may adsorb more or less to soils depending on a variety of factors (e.g., organic content, grain size, moisture content). Additionally, the distribution of PFAS and PAHs in soil may depend on the source, the temporal nature of the release, and precipitation/infiltration. Unlike the photoionization detector (PID) for volatile organic compounds (VOCs), a field screening technique for background levels of PFAS and PAHs is not readily available. To be consistent with the Vermont Study and with many typical sampling approaches for characterization of PFAS and PAHs in soil, discrete grab samples were collected from a specific depth interval (i.e., 0 to 6 inches for this Study) for laboratory analysis.

#### **SAMPLE COLLECTION**

Sampling personnel donned a new pair of nitrile gloves for each new sampling location. Nitrile gloves were replaced immediately before handling sample bottles, immediately before handling sampling equipment, and immediately before collecting the samples. Gloves needed to be replaced more frequently than is typical with environmental soil sampling in order to limit cross-contamination potential.

Samples were collected using the procedures described in Exhibit 1 below.

#### **Exhibit 1     Soil Sample Collection Procedure**

- *Select a location that is not heavily trafficked and that does not have sensitive landscaping features. Clear the sample location of any surface debris and leaf litter, and lay out polyethylene plastic sheeting.*
- *If grass is present, remove an approximately 1-foot diameter circle of the grass as a single piece of sod as feasible. Additionally, remove any surficial soil consisting primarily of organic litter or root matter. Place the sod, organic litter, and root matter on the plastic sheeting so it may be replaced after sample collection.*
- *Freshly gloved hands should be used for sample collection. Advance the stainless-steel spade or scoop to the required depth of 6 inches and place the soil into a stainless-steel mixing bowl (placed on the plastic sheeting) or in a new, resealable plastic (e.g., Ziploc®) bag. Place excess soil on the plastic sheeting so it may be replaced after sample collection.*
- *Mix the sample volume (including multiple grab samples, if required) thoroughly and in a manner which limits the introduction of air into the sample as much as is practicable. Remove any large rocks, gravel, or organic litter from the sample volume.*

- *Fill the sample containers for the intended chemical analyses. PFAS samples should be collected first, followed by PAH, soil parameter, and cold storage samples. The sample bottle caps should not be placed on any surface during sampling and, after samples are collected, the bottles should be immediately capped and labeled. Samples for PFAS analysis and cold storage should each be sealed in individual resealable plastic (e.g., Ziploc®) bags. Place sample containers on ice for delivery to the laboratory.*
- *Classify and log the soil sample using a modified Burmister Soil Classification System and record field observations.*
- *Restore the sampling area using surrounding soil and loam so that any sampling holes or divots are repaired. If grass was present, reinstall the removed sod.*
- *Between each sampling location, decontaminate soil sampling equipment using the procedures outlined below.*

## **FIELD EQUIPMENT DECONTAMINATION PROCEDURES**

Reusable soil sampling equipment (i.e., stainless-steel spade and scoop, stainless steel mixing bowl, steel spade) was decontaminated between each sample collection using the procedures described in Exhibit 2 below.

### **Exhibit 2 Sampling Equipment Decontamination Procedure**

- *Remove loose material with a brush.*
- *Rinse equipment with a distilled/deionized water rinse and scrub.*
- *Rinse with an Alconox® or Liquinox® detergent wash made with distilled/deionized water.*
- *Rinse with distilled/deionized water rinse.*
- *Complete with a final rinse of laboratory-verified PFAS-free water.*

## **EQUIPMENT AND SUPPLIES**

The following supplies were used for sampling: stainless steel spade; stainless steel scoop; stainless steel mixing bowl; steel spade; sampling containers; plastic sheeting; decontamination brushes; detergent; distilled/deionized water; laboratory-verified PFAS-free water; cooler; ice; personal protective equipment; field sampling summary forms; and tablet/phone/camera.

Additionally, the following table provides a summary of items that are likely to contain PFAS (i.e., items prohibited at the sampling location) and the allowable alternatives. Sampling personnel and procedures avoided the use of prohibited items.

Item Category	Allowable Items	Prohibited Items
Decontamination	Alconox® and/or Liquinox®, deionized rinse, and a final PFAS-free water rinse.	Decon 90.
Sample Storage and Preservation	Laboratory-provided sample container (HDPE or polypropylene bottles), regular ice in resealable plastic bags. After sampling, containers will be stored individually in resealable plastic bags.	For PFAS sample storage, LDPE or glass bottles, PTFE- or Teflon®-lined caps. Field filtration of liquid samples (samples cannot be field filtered due to potential PFAS adsorption onto the filter).
Field Documentation	Plain paper, metal clipboard, Sharpies®, pens.	Waterproof/treated paper or field books, plastic clipboards, non-Sharpies® markers, Post-It®, and other adhesive paper products.
Field Clothing	Well-laundered (more than six times washed after purchase) clothing made of synthetic or cotton material (with no use of fabric softener).  Polyurethane and wax coated materials.  Boots made with polyurethane and PVC; well-worn or untreated leather boots.  PFAS-free Tyvek® material.	Clothing (including boots) made of Gore-Tex™ or other synthetic water-resistant and/or stain-resistant material; coated Tyvek® material.  Fabric softener.
Personal Care Products (for the day of sampling)	<b>Sunscreens</b> – Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss My Face, Baby sunscreens that are “free” or “natural”. <b>Insect Repellents</b> – Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellent, Herbal Armor, California Baby Natural Bug Spray, BabyGanics. <b>Sunscreen and insect repellent</b> – Avon Skin So Soft Bug Guard – SPF 30 Lotion.	Cosmetics, moisturizers, hand cream, and other related products.
Food and Beverage	Bottled water and hydration drinks.	Pre-packaged food, fast food wrappers and containers. Consumption of food or drink during sampling.

## Notes:

1. This table is adapted from the Master Quality Assurance Project Plan of the Hazardous Waste Remediation Bureau, Waste Management Division of the New Hampshire Department of Environmental Services, standard operating procedure number HWRB-21. Additionally, information from the Maine DEP’s “PFAS Sampling and Analysis Plan Form Template” was incorporated.
2. If an item is expected to come in direct contact with field samples, it may be necessary to have the products analyzed for PFAS to confirm that a specific batch or lot number does not contain PFAS. If an item is not expected to come into direct contact with field samples, then the product Safety Data Sheet and/or manufacturing specifications may be reviewed to determine if the item is PFAS-containing by checking for any chemicals with “fluoro” in the name or the acronyms PTFE, TPE, FEP, ETFE, or PFA.

## SAMPLE HANDLING AND CUSTODY REQUIREMENTS

Sampling was documented at the time of sample collection, including relevant field measurements/observations (e.g., depth interval of the sample, sample collection time,

etc.). Completed field forms are included as Appendix C, and the field sampling information indicated on the example form was documented using paper or electronic forms.

Samples for analysis by Alpha Analytical Laboratories, Inc. (Alpha) were placed in appropriate, laboratory-provided sample containers. These same containers were used to collect samples delivered to the Maine Department of Environmental Protection for storage and potential follow-up analyses. Samples for analysis by the University of Maine Soil Testing Service (UMaine Soil Laboratory) were placed in plastic, resealable bags (as requested by the laboratory).

The samples were labeled according to the identification procedures described below. Following collection and through delivery to the laboratory, sample containers were maintained in coolers with ice at a temperature of approximately 4 degrees Celsius, as required to for laboratory and method requirements. Samples were transported under chain-of-custody procedures described below.

### Sample Containers

A summary of sample containers used per sample is provided below.

Matrix	Laboratory	Analyte	Sample Container <sup>1</sup>	Preservative	Quantity Per Sample
Soil	Alpha	PFAS	Plastic 250 ml / 8 oz	None	1
Soil	Alpha	PAHs	Glass 250 ml / 8 oz	None	1
Soil	Alpha	TOC	Glass 60 ml / 2 oz	None	1
Soil	Alpha	Total solids	Glass 60 ml / 2 oz	None	1
Soil	UMaine	Grain size analysis	Plastic, resealable bag 250 ml / 8 oz	None	1
Soil	UMaine	Standard soil parameters			
Soil	-	Maine DEP cold storage	Plastic 250 ml / 8 oz	None	3
Aqueous field /Equipment Blank	Alpha	PFAS	Plastic 250 ml / 8 oz	None	2
Aqueous Equipment Blank	Alpha	PAHs	Glass 250 ml / 8 oz	None	2

### Sample Identification

Containers for samples intended for laboratory analysis were labeled with a sample identification number. The identification number consisted of the sampling location, an underscore, and the sampling date (e.g., AN-1\_20211115).


### Sample Transportation and Chain-of-Custody

Standard chain-of-custody procedures were followed as samples (intended for laboratory analysis) were collected, transferred, stored, or analyzed, in order to develop a record

which documented and traced the possession and handling of a sample from collection to analysis. The chain-of-custody forms are included in the laboratory analytical data reports, provided in Appendix D.

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**APPENDIX C**  
**FIELD FORMS**



	Project Number: 5060.00	Sample Location: AN-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AN-01_20211118
Project Manager: Harrison Roakes	Property Name: Androscoggin Riverlands State Park - Northern Parking Area	
Collector(s): Michael Fuerte	Date: 11/18/2021 1:15:00 PM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.26205	
	Longitude: -70.18864	
Weather: Overcast, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Vegetated area on hill slope, down-slope of dirt parking lot.		
Surroundings Description: Residential area/game or park land, surrounded by mixed wood lots. No source of PFAS or PAH observed.		
Burmister Soil Description: Brown, fine to medium SAND, little Silt, very few organic fragments. Moist.		



Field Photo:










	Project Number: 5060.00	Sample Location: AN-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AN-02_20211118
Project Manager: Harrison Roakes		Property Name: Lake Auburn Public Boat Ramp
Collector(s): Michael Fuerte		Date: 11/18/2021 11:45:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.14424	
	Longitude: -70.22931	
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Grassy area off paved road, adjacent to river and boat launch.		
Surroundings Description: Residential/commercial area along river, surrounded by mixed wood lots. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, SILT, little Sand, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: AN-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AN-03_20211118
		Property Name: Garcelon Bog
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/18/2021 10:35:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.09812	
	Longitude: -70.18185	
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt hiking trail.		
Surroundings Description: Residential area/park lands surrounded by mixed wood forest. No potential PFAS or PAH source observed		
Burmister Soil Description: Reddish-brown and blackish-brown, ORGANIC SILT, little Sand, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: AN-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AN-04_20211118
		Property Name: Miller Park
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/18/2021 9:30:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.01218	
	Longitude: -70.08604	
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area of of dirt hiking trail and paved parking lot.		
Surroundings Description: Residential/Commercial area; state park land adjacent to river and mixed wood forest. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, some Sand, trace Clay. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: AR-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AR-01_11152021
Project Manager: Harrison Roakes	Property Name: Meduxnekeag River Access @ Houlton	
Collector(s): Andrew Newcomb (MEDEP)	Date: 11/15/2021 1:00:00 PM	
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags	Latitude: 46.12867	
	Longitude: -67.83812	
Weather: Rain/Snow, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off paved parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, fine to medium SILT, some Sand, trace Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: AR-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AR-02_11152021
Project Manager: Harrison Roakes		Property Name: Aroostook River Access @ Presque Isle
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/15/2021 4:30:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 46.70412
Weather: Overcast, 30°F		Longitude: -68.00751
		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to medium SILT, some Sand, trace Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: AR-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AR-03_11152021
		Property Name: Salmon Brook Lake Bog
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/15/2021 3:00:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 46.91629
		Longitude: -68.24923
Weather: Rain/Snow, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Rural Residential/forrested area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to coarse SILT and CLAY, some Gravel, few organic fragments. Wet.		
Field Photo: None available.		



	Project Number: 5060.00	Sample Location: AR-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: AR-04_20211115 Property Name: Aroostook River @ Caribou
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/15/2021 4:00:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 46.85612
		Longitude: -68.00309
Weather: Overcast, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking lot.		
Surroundings Description: Commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Brown, SILT, some Sand, trace Clay, trace Gravel, few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: CU-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: CU-01_20211115
		Property Name: Steep Falls WMA
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/15/2021 11:55:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 43.83065	
	Longitude: -70.60631	
Weather: Rain/Snow, 40°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt access road from Rt 114.		
Surroundings Description: Residential area in mixed wood forest, off of main road, adjacent to Sebago Lake. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to coarse SAND, trace Silt. Moist.		
Field Photo:		
		







	Project Number: 5060.00	Sample Location: CU-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: CU-02_11082021
		Property Name: Mackworth Island State Park
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/8/2021 3:35:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.68951
		Longitude: -70.23492
Weather: Clear, 50°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt parking lot.		
Surroundings Description: Commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Brown, fine to medium SAND, trace Silt, trace Gravel. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: CU-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: CU-03_11082021
		Property Name: Scarborough Marsh WMA
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/8/2021 2:10:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.57317
		Longitude: -70.38357
Weather: Clear, 60°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt parking lot.		
Surroundings Description: Commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Brown, Clayey SILT, little Sand. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: CU-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: CU-04_20211115
		Property Name: Maine Wildlife Park
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/15/2021 1:20:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 43.92332	
	Longitude: -70.34510	
Weather: Overcast, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved road.		
Surroundings Description: Commercial area (office buildings ) within state-owned lands. No potential PFAS or PAH source observed.		
Burmister Soil Description: Grayish brown, fine to medium SAND, trace silt, little Gravel. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: FR-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: FR-01_20211116
		Property Name: Chesterville WMA
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/16/2021 3:10:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.55093	
	Longitude: -70.08654	
Weather: Rain/Snow, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off gravel parking lot in small wildlife management lot.		
Surroundings Description: Residential/Commercial area adjacent to river and minor dam. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SAND and SILT, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: FR-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: FR-02_20211116
Project Manager: Harrison Roakes	Property Name: French Falls Recreation Area	
Collector(s): Michael Fuerte	Date: 11/16/2021 2:25:00 PM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.49533	
	Longitude: -70.20663	
Weather: Overcast, 30°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential area/municipal park surrounded by mixed wood lots. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to medium SAND, little silt, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: FR-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: FR-03_20211116
		Property Name: Mount Blue State Park
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/16/2021 11:50:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.71379	
	Longitude: -70.41994	
Weather: Overcast, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off gravel parking lot, on hill slope.		
Surroundings Description: Residential area/Park land with very few structures. Atop eastern hills in valley overlooking river. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, trace Sand, trace rounded Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: FR-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: FR-04_20211116
Project Manager: Harrison Roakes		Property Name: Strong WMA
Collector(s): Michael Fuerte		Date: 11/16/2021 12:55:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.75817	
	Longitude: -70.21539	
Weather: Overcast, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off gravel road and adjacent to paved road.		
Surroundings Description: Residential/Commercial area in grassy and mixed wood lots. No potential PFAS or PAH sources observed.		
Burmister Soil Description: Dark brown, SILT, with Sand, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		


	Project Number: 5060.00	Sample Location: HA-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: HA-01_11182021
Project Manager: Harrison Roakes	Property Name: Ellsworth High School	
Collector(s): Andrew Newcomb (MEDEP)	Date: 11/18/2021 6:00:00 PM	
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags	Latitude: 44.55643	
	Longitude: -68.43107	
Weather: Overcast, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass sports field off paved parking area.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SILT, with Sand, with Clay, trace Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: HA-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: HA-02_11182021
		Property Name: Amherst Mountains
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/18/2021 8:00:00 AM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.82519
		Longitude: -68.40322
Weather: Rain/Snow, 40°F		Depth Interval: 0 to 6 inches
Location Description: Shrubby edge of gravel road, near paved state highway.		
Surroundings Description: Forested area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, fine to course SAND, trace Silt, some Gravel, few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: HA-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: HA-03_11182021
Project Manager: Harrison Roakes		Property Name: Lyle Frost (Scammon Marsh) WMA
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/18/2021 5:00:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.68165
Weather: Overcast, 50°F		Longitude: -68.26239
		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking area, next to paved road.		
Surroundings Description: Rural Residential / lakeside area. No potential PFAS or PAH source observed		
Burmister Soil Description: Brown, fine to coarse SILT and SAND, trace Gravel, trace roots. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: HA-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: HA-04_11182021
Project Manager: Harrison Roakes	Property Name: Lower Lead Mtn Pond Boating Access	
Collector(s): Andrew Newcomb (MEDEP)	Date: 11/18/2021 9:00:00 AM	
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags	Latitude: 44.84596	
	Longitude: -68.17653	
Weather: Overcast, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Boggy lowland next to lake and dirt road/parking area.		
Surroundings Description: Rural Residential / lakeside area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light to Dark Brown, fine SILT, trace sand, trace gravel, few roots. Dry.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: KE-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KE-01_20211117
		Property Name: Viles Arboretum
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/17/2021 11:20:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.29972	
	Longitude: -69.76655	
Weather: Clear, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking lot, on hill facing paved road.		
Surroundings Description: Commercial area and arboretum. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, little Sand, trace Clay, very few organic fragments. Moist.		



Field Photo:





	Project Number: 5060.00	Sample Location: KE-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KE-02_20211117
		Property Name: Inland Fisheries and Wildlife Sidney Headquarters
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/17/2021 10:05:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.45099	
	Longitude: -69.72716	
Weather: Clear, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area at base of hill, down-slope of paved lot housing storage shed.		
Surroundings Description: Commercial area (offices and storage unit). No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, some Sand, trace Clay. Wet.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: KE-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KE-03_20211117
		Property Name: Quimby Field
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/17/2021 12:05:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.21989	
	Longitude: -69.77097	
Weather: Overcast, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking lot. Located behind garage/shed near entrance to ball fields.		
Surroundings Description: Residential area/municipal park. No potential PFAS/PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SAND, with silt, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: KE-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KE-04_20211117
Project Manager: Harrison Roakes	Property Name: Pine Ridge Municipal Golf Course	
Collector(s): Michael Fuerte	Date: 11/17/2021 9:10:00 AM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.53260	
	Longitude: -69.66132	
Weather: Clear, 30°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off paved parking lot, near manicured lawn used for golf course.		
Surroundings Description: Commercial area used for golfing and other recreational activities. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown SILT, some Clay, little Sand, very few organic fragments. Moist.		
Field Photo:		
		


	Project Number: 5060.00	Sample Location: KN-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KN-01_11092021
		Property Name: Jaycee Park- Kenniston Field
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 3:00:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.11971	
	Longitude: -69.12325	
Weather: Clear, 60°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to course SAND, some Gravel. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: KN-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KN-02_11092021
		Property Name: R. Waldo Tyler (Weskeag Marsh) WMA
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 2:10:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.08885	
	Longitude: -69.13186	
Weather: Clear, 70°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to coarse SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: KN-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KN-03_11102021
		Property Name: Camden Hills State Park
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/10/2021 8:45:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.23057	
	Longitude: -69.04897	
Weather: Rain, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off paved parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to medium SAND, some Gravel, trace Silt. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: KN-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: KN-04_11092021
Project Manager: Harrison Roakes	Property Name: Alford Lake Boat Ramp, Beaver Lodge Rd, Hope	
Collector(s): Daniel Robinson	Date: 11/9/2021 1:20:00 PM	
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.23806	
	Longitude: -69.22780	
Weather: Clear, 60°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Tan to brown, very fine to medium SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: LI-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: LI-01_11092021
		Property Name: Earle R. Kelly (Dresden Bog) WMA
Project Manager: Harrison Roakes		Date: 11/9/2021 10:35:00 AM
Collector(s): Daniel Robinson		Latitude: 44.10611
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Longitude: -69.68997
Weather: Clear, 50°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt road.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to medium SAND, little Gravel, trace Silt. Moist.		



Field Photo:





	Project Number: 5060.00	Sample Location: LI-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: LI-02_20211117
Project Manager: Harrison Roakes		Property Name: Waldoboro Village River Park
Collector(s): Michael Fuerte		Date: 11/17/2021 3:00:00 PM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 44.09720
Weather: Overcast, 40°F		Longitude: -69.37910
		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off main grass walking path. Located at base of hill leading to main parking lot.		
Surroundings Description: Residential/Commercial area, adjacent to river. No potential PFAS or PAH source observed		
Burmister Soil Description: Dark brown, SILT, with Clay, little Sand, few organic fragments. Moist.		
Field Photo:		
		


	Project Number: 5060.00	Sample Location: LI-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: LI-03_11092021
		Property Name: Dyer Long Pond Access
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 11:45:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.18594	
	Longitude: -69.52553	
Weather: Clear, 60°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to medium SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: LI-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: LI-04_11092021
		Property Name: Damariscotta Lake State Park
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 12:30:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 44.19828
		Longitude: -69.45302
Weather: Clear, 60°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved road.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to coarse SAND, some Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: OX-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: OX-04_20211115
Project Manager: Harrison Roakes		Property Name: Lake Penesseewassee Little Red School House
Collector(s): Michael Fuerte		
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Date: 11/15/2021 4:00:00 PM
Weather: Overcast, 40°F		Latitude: 44.21516
		Longitude: -70.57946
		Depth Interval: 0 to 6 inches
Location Description: Vegetated area on hill slope down-slope of gravel parking lot.		
Surroundings Description: Residential/Commercial are; adjacent to lake. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to mediums SAND and SILT, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		







	Project Number: 5060.00	Sample Location: OX-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: OX-02_20211115
Project Manager: Harrison Roakes	Property Name: Grove Street Baseball Fields	
Collector(s): Michael Fuerte	Date: 11/15/2021 3:00:00 PM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.20497	
	Longitude: -70.52656	
Weather: Overcast, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Vegetated area off dirt parking lot near baseball park.		
Surroundings Description: Commercial area/municipal park. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, with Sand, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: OX-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: OX-03_20211116 Property Name: Androscoggin River Access @ Hanover
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/16/2021 10:20:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.49340	
	Longitude: -70.69458	
Weather: Overcast, 30°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off paved parking lot leading to boat launch. Location appears to be in makeshift trail.		
Surroundings Description: Residential/Commercial area, adjacent to river. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, SILT, trace Clay, Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: OX-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: OX-04_20211116
Project Manager: Harrison Roakes	Property Name: Trout Pond	
Collector(s): Michael Fuerte	Date: 11/16/2021 9:15:00 AM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.24049	
	Longitude: -70.82318	
Weather: Overcast, 30°F	Depth Interval: 0 to 6 inches	
Location Description: Vegetated area off gravel road, area accessed through locked gate.		
Surroundings Description: Residential area, adjacent to cattle pasture. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SAND and SILT, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: PE-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PE-01_12032021
		Property Name: Katahdin Pride Park
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 12/3/2021 11:59:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 45.66369
		Longitude: -68.70640
Weather: Overcast, 30°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/Commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Brown, fine to coarse SAND, some Gravel, little Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: PE-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PE-02_11172021
Project Manager: Harrison Roakes		Property Name: Penobscot River Water Access
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/17/2021 3:30:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.86991
Weather: Overcast, 30°F		Longitude: -68.67320
		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking lot.		
Surroundings Description: Residential area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to coarse SILT, some Sand, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: PE-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PE-03_11192021
		Property Name: Little City Park
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/19/2021 9:20:00 AM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.81546
		Longitude: -68.77617
Weather: Clear, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass park area off of paved road.		
Surroundings Description: Residential area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SILT, some Sand, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: PE-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PE-04_11172021
Project Manager: Harrison Roakes	Property Name: Greenbush Forest Nursery	
Collector(s): Andrew Newcomb (MEDEP)	Date: 11/17/2021 1:00:00 PM	
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags	Latitude: 45.14324	
	Longitude: -68.57224	
Weather: Overcast, 30°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off of dirt driveway.		
Surroundings Description: Residential/forrested area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Ligth brown, fine to medium SILT, some Sand, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: PI-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PI-01_11102021
		Property Name: Bud Leavitt (Bull Hill) WMA
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/10/2021 12:50:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 45.14898	
	Longitude: -69.11722	
Weather: Clear, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to medium SAND, little Silt. Moist.		
Field Photo:		
		




	Project Number: 5060.00	Sample Location: PI-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PI-02_20211119
Project Manager: Harrison Roakes	Property Name: Fairview Ave Ballfield	
Collector(s): Daniel Robinson	Date: 11/10/2021 1:30:00 PM	
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 45.18946	
	Longitude: -69.22025	
Weather: Clear, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grassy area off gravel road, adjacent to baseball field		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine SAND and SILT, little Clay, very few organic fragments. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: PI-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PI-03_11102021
		Property Name: Little Moose Unit
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/10/2021 2:50:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 45.44912	
	Longitude: -69.62323	
Weather: Clear, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, fine to medium SAND, some Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: PI-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: PI-04_11112021
		Property Name: Lily Bay State Park
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/11/2021 8:30:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 45.56911	
	Longitude: -69.53895	
Weather: Clear, 30°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off paved road.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to medium SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SA-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SA-01_11092021
		Property Name: Topsham Recreational Fields
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 8:40:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.92369
		Longitude: -69.93826
Weather: Clear, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown to brown, very fine to medium SAND, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SA-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SA-02_20211118
		Property Name: South End Park
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/18/2021 8:15:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.89732
		Longitude: -69.81606
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Grass area within gated park, located off paved parking lot.		
Surroundings Description: Residential/Commercial area; dog park. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SAND, with SILT, trace Clay, very few organic fragments. Moist.		

Field Photo:







	Project Number: 5060.00	Sample Location: SA-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SA-03_11092021
		Property Name: Cutler
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/9/2021 9:15:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 43.96257	
	Longitude: -69.92953	
Weather: Clear, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Gray, Clayey SILT, trace Sand. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SA-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SA-04_20211117
Project Manager: Harrison Roakes	Property Name: Peacock Beach State Park	
Collector(s): Michael Fuerte	Date: 11/17/2021 1:15:00 PM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.15965	
	Longitude: -69.86416	
Weather: Overcast, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off gravel parking lot.		
Surroundings Description: Residential area/park land in mixed wood lot. Adjacent to river. No potential PFAS or PAH source observed		
Burmister Soil Description: Dark brown, fine SAND and SILT, trace Clay, trace Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SO-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SO-01_20211119
		Property Name: Memorial Field
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/19/2021 8:30:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.77332	
	Longitude: -69.71292	
Weather: Clear, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass area behind baseball field.		
Surroundings Description: Residential area; school recreational field. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to medium SAND, little Silt, very few organic fragments. Moist.		
Field Photo:		
		







	Project Number: 5060.00	Sample Location: SO-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SO-02_20211118
Project Manager: Harrison Roakes	Property Name: Skowhegan Community Center	
Collector(s): Michael Fuerte	Date: 11/18/2021 3:20:00 PM	
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.75455	
	Longitude: -69.72623	
Weather: Overcast, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area atop hill, off paved parking lot.		
Surroundings Description: Residential/Commercial area, recreational field. No potential PFAS or PAH source observed		
Burmister Soil Description: Brown, SILT, little Sand, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SO-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SO-03_11112021
		Property Name: Emden Boating
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/11/2021 11:30:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.91286	
	Longitude: -69.94124	
Weather: Clear, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, very fine to medium SAND, little Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: SO-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: SO-04_11112021
		Property Name: Caratunk N
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/11/2021 10:30:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 45.24644	
	Longitude: -69.96223	
Weather: Clear, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off paved road.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Brown, fine to coarse SAND, some Gravel. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: WL-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WL-01_11102021
Project Manager: Harrison Roakes		Property Name: Camden Hills State Park
Collector(s): Daniel Robinson		Date: 11/10/2021 9:45:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 44.28025
Weather: Rain, 40°F		Longitude: -69.04442
		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, fine to coarse SAND, some Gravel. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WL-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WL-02_11102021
		Property Name: Walsh Field Recreation Area
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/10/2021 9:50:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 44.41583
		Longitude: -69.02054
Weather: Rain, 40°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, very fine to coarse SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WL-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WL-03_11102021
		Property Name: Sandy Point
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/10/2021 10:40:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.50676	
	Longitude: -68.80772	
Weather: Rain, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Grass area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown to brown, fine to coarse SAND, some Gravel. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WL-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WL-04_20211117 Property Name: Gene Letourneau (Frye Mountain) WMA
Project Manager: Harrison Roakes		
Collector(s): Michael Fuerte		Date: 11/17/2021 8:00:00 AM
Sampling Equipment: Stainless-steel scoop, nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 44.47207	
	Longitude: -69.25939	
Weather: Clear, 30°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off gravel road.		
Surroundings Description: Residential area/park lands in grassy and mixed wood lots. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine SAND, with Silt, trace Clay, very few organic fragments. Moist.		
Field Photo:		
		


	Project Number: 5060.00	Sample Location: WS-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WS-01_11182021
		Property Name: Machias River Phase I
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/18/2021 10:05:00 AM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.91185
		Longitude: -67.85482
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Edge of forest near dirt road.		
Surroundings Description: Forested area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Light brown, fine to coarse SAND, some Gravel, very few organic fragments. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WS-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WS-02_11182021
Project Manager: Harrison Roakes	Property Name: Meddybemps Lake Boating Access	
Collector(s): Andrew Newcomb (MEDEP)	Date: 11/18/2021 1:20:00 PM	
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags	Latitude: 45.03854	
	Longitude: -67.35521	
Weather: Overcast, 50°F	Depth Interval: 0 to 6 inches	
Location Description: Edge of forest near paved parking area.		
Surroundings Description: Residential / commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to coarse SILT and SAND, some Gravel, common roots. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WS-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WS-03_11182021
		Property Name: Waterfront Walkway @ Calais
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/18/2021 12:15:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 45.18981
		Longitude: -67.27748
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off paved parking area.		
Surroundings Description: Residential / commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to coarse SILT and SAND, trace Gravel, very few roots. Moist.		
Field Photo:		
		



	Project Number: 5060.00	Sample Location: WS-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: WS-04_11182021
		Property Name: Gaddis Pool
Project Manager: Harrison Roakes		
Collector(s): Andrew Newcomb (MEDEP)		Date: 11/18/2021 3:00:00 PM
Sampling Equipment: Stainless-steel scoop, Stainless-steel mixing bowl, and re-sealable plastic bags		Latitude: 44.74052
		Longitude: -67.38600
Weather: Overcast, 50°F		Depth Interval: 0 to 6 inches
Location Description: Grass area off dirt parking area.		
Surroundings Description: Residential / commercial area. No potential PFAS or PAH source observed.		
Burmister Soil Description: Dark brown, fine to medium SILT, trace Gravel, trace roots. Moist.		
Field Photo:		
		


	Project Number: 5060.00	Sample Location: YO-01
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: YO-01_11082021
Project Manager: Harrison Roakes		Property Name: Clifford Park
Collector(s): Daniel Robinson		Date: 11/8/2021 1:15:00 PM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.48810
Weather: Clear, 60°F		Longitude: -70.44859
		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off paved parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Tan to light brown, fine to course SAND, trace Gravel. Moist.		

Field Photo:



	Project Number: 5060.00	Sample Location: YO-02
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: YO-02_11082021
		Property Name: Laudholm Farm
Project Manager: Harrison Roakes		
Collector(s): Daniel Robinson		Date: 11/8/2021 10:10:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags	Latitude: 43.31886	
	Longitude: -70.56758	
Weather: Clear, 40°F	Depth Interval: 0 to 6 inches	
Location Description: Vegetated area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Tan to light brown, fine to coarse SAND, trace Gravel, trace Silt. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: YO-03
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: YO-03_11082021
Project Manager: Harrison Roakes		Property Name: Kennebunk Plains WMA
Collector(s): Daniel Robinson		Date: 11/8/2021 11:14:00 AM
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Latitude: 43.40249
Weather: Clear, 60°F		Longitude: -70.62492
		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt parking lot.		
Surroundings Description: Commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Red brown, fine to medium SAND, little Silt. Moist.		
Field Photo:		
		

	Project Number: 5060.00	Sample Location: YO-04
	Project Name: Background Levels of PFAS and PAHs in Maine Shallow Soils	Sample ID: YO-04_11082021
		Property Name: Sanford - Community Forest
Project Manager: Harrison Roakes		Date: 11/8/2021 12:20:00 PM
Collector(s): Daniel Robinson		Latitude: 43.44905
Sampling Equipment: Nitrile gloves, stainless-steel mixing bowl, steel spade, and re-sealable plastic bags		Longitude: -70.78492
Weather: Clear, 60°F		Depth Interval: 0 to 6 inches
Location Description: Vegetated area off dirt parking lot.		
Surroundings Description: Residential/commercial area. No potential PFAS or PAH source was observed.		
Burmister Soil Description: Brown, fine to medium SAND, little Gravel, trace Silt. Moist.		

Field Photo:



**APPENDIX D**

**ANALYTICAL  
LABORATORY DATA REPORTS**



**Alpha Analytical Laboratories, Inc.**  
**L2162323**



## ANALYTICAL REPORT

Lab Number:	L2162323
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	12/08/21

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-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2162323-01	LI-03_11092021	SOIL	VARIOUS, MAINE	11/09/21 11:45	11/12/21
L2162323-02	LI-04_11092021	SOIL	VARIOUS, MAINE	11/09/21 12:30	11/12/21
L2162323-03	KN-04_11092021	SOIL	VARIOUS, MAINE	11/09/21 13:20	11/12/21
L2162323-04	KN-02_11092021	SOIL	VARIOUS, MAINE	11/09/21 14:10	11/12/21
L2162323-05	KN-01_11092021	SOIL	VARIOUS, MAINE	11/09/21 15:00	11/12/21
L2162323-06	KN-03_11102021	SOIL	VARIOUS, MAINE	11/10/21 08:45	11/12/21
L2162323-07	WL-01_11102021	SOIL	VARIOUS, MAINE	11/10/21 09:45	11/12/21
L2162323-08	WL-02_11102021	SOIL	VARIOUS, MAINE	11/10/21 09:50	11/12/21
L2162323-09	TB-1_11032021	WATER	VARIOUS, MAINE	11/03/21 16:10	11/12/21
L2162323-10	WL-03_11102021	SOIL	VARIOUS, MAINE	11/10/21 10:40	11/12/21
L2162323-11	PI-01_11102021	SOIL	VARIOUS, MAINE	11/10/21 12:50	11/12/21
L2162323-12	PI-02_11102021	SOIL	VARIOUS, MAINE	11/10/21 13:30	11/12/21
L2162323-13	PI-03_11102021	SOIL	VARIOUS, MAINE	11/10/21 14:50	11/12/21
L2162323-14	PI-04_11112021	SOIL	VARIOUS, MAINE	11/11/21 08:30	11/12/21
L2162323-15	SO-04_11112021	SOIL	VARIOUS, MAINE	11/11/21 10:30	11/12/21
L2162323-16	SO-03_11112021	SOIL	VARIOUS, MAINE	11/11/21 11:30	11/12/21
L2162323-17	YO-02_11082021	SOIL	VARIOUS, MAINE	11/08/21 10:10	11/12/21
L2162323-18	YO-03_11082021	SOIL	VARIOUS, MAINE	11/08/21 11:14	11/12/21
L2162323-19	YO-04_11082021	SOIL	VARIOUS, MAINE	11/08/21 12:20	11/12/21
L2162323-20	YO-01_11082021	SOIL	VARIOUS, MAINE	11/08/21 13:15	11/12/21
L2162323-21	CU-03_11082021	SOIL	VARIOUS, MAINE	11/08/21 14:10	11/12/21
L2162323-22	CU-02_11082021	SOIL	VARIOUS, MAINE	11/08/21 15:35	11/12/21
L2162323-23	SA-01_11092021	SOIL	VARIOUS, MAINE	11/09/21 08:40	11/12/21
L2162323-24	SA-03_11092021	SOIL	VARIOUS, MAINE	11/09/21 09:15	11/12/21

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2162323-25	LI-01_11092021	SOIL	VARIOUS, MAINE	11/09/21 10:35	11/12/21
L2162323-26	TB-2_11032021	WATER	VARIOUS, MAINE	11/03/21 16:10	11/12/21
L2162323-27	EB-01_20211115	WATER	VARIOUS, MAINE	11/10/21 12:38	11/12/21
L2162323-28	FB-01_20211115	WATER	VARIOUS, MAINE	11/10/21 12:46	11/12/21

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### 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.

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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### Case Narrative (continued)

#### Report Submission

December 08, 2021: This final report includes the results of all requested analyses.

November 30, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2162323-12 was cancelled at the client's request.

#### PAHs by SIM

L2162323-02D, -10D, and -15D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2162323-10D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

L2162323-24D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L2162323-01 through -11, -13 through -28, WG1571865-3, WG1572400-3, WG1571865-4, and WG1572400-4: Sample results for Perfluorohexanesulfonic Acid (PFHxS), Perfluorooctanoic Acid (PFOA), Perfluorooctanesulfonic Acid (PFOS), N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA), and N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA) are reported as the sum of the branched and linear isomers.

L2162323-01 through -08, -10, -11, -13 through -25, -27, WG1571865-1, WG1572400-1, WG1571865-2, WG1572400-2, WG1571865-3, WG1572400-3, WG1571865-4, and WG1572400-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### Case Narrative (continued)

section of the report for details.

L2162323-07: The Extracted Internal Standard recovery is less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (7%); however, re-extraction with the method required holding time exceeded confirmed the original result: n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (5%). The results of the original analysis are reported.

L2162323-08, -11, -17, and -19 through -22: The MeOH fraction of the extraction is reported for perfluorooctanesulfonamide (fosa) due to better extraction efficiency of the perfluoro[13c8]octanesulfonamide (m8fosa) Extracted Internal Standard.

L2162323-18: The Extracted Internal Standard recoveries are less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (1%), n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (3%), and perfluoro[13c2]hexadecanoic acid (m2pfhxda) (9%); however, re-extraction with the method required holding time exceeded confirmed the original results: n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (2%), n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (1%), and perfluoro[13c2]hexadecanoic acid (m2pfhxda) (6%) The results of the original analysis are reported.

The WG1572400-3 MS recovery, performed on L2162323-22, is outside the acceptance criteria for perfluorotetradecanoic acid (pfta) (137%).

#### Total Organic Carbon

The samples were frozen upon receipt in order to arrest the holding time.

L2162323-08: The Sample Replicate RPD is outside the acceptance criteria of 30%. A double-burn re-analysis was performed with a confirming result. The results of the original analysis are reported. The elevated RPD has been attributed to the non-homogeneous nature of the sample.

The WG1575747-4 MS recoveries for total organic carbon (rep1) (220%) and total organic carbon (rep2) (143%), performed on L2162323-14, are outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria, indicating the sample batch was in control, and all sample results were accepted.

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00


**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Case Narrative (continued)**

The WG1576139-4 MS recovery for total organic carbon (rep2) (127%), performed on L2162323-25, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria, indicating the sample batch was in control, and all sample results were accepted.

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:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 12/08/21



# ORGANICS

# SEMIVOLATILES

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-01  
 Client ID: LI-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 11:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 12:57  
 Analyst: DV  
 Percent Solids: 66%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	9.9	2.1	1
2-Chloronaphthalene	ND		ug/kg	9.9	1.3	1
Fluoranthene	4.9	J	ug/kg	9.9	0.70	1
Naphthalene	ND		ug/kg	9.9	1.8	1
Benzo(a)anthracene	2.8	J	ug/kg	9.9	0.94	1
Benzo(a)pyrene	2.3	J	ug/kg	9.9	1.2	1
Benzo(b)fluoranthene	3.7	J	ug/kg	9.9	0.94	1
Benzo(k)fluoranthene	1.1	J	ug/kg	9.9	0.90	1
Chrysene	2.5	J	ug/kg	9.9	0.74	1
Acenaphthylene	ND		ug/kg	9.9	1.2	1
Anthracene	ND		ug/kg	9.9	0.80	1
Benzo(ghi)perylene	1.9	J	ug/kg	9.9	0.84	1
Fluorene	ND		ug/kg	9.9	1.2	1
Phenanthrene	2.6	J	ug/kg	9.9	0.84	1
Dibenzo(a,h)anthracene	ND		ug/kg	9.9	0.99	1
Indeno(1,2,3-cd)pyrene	2.1	J	ug/kg	9.9	1.2	1
Pyrene	4.5	J	ug/kg	9.9	0.70	1
1-Methylnaphthalene	ND		ug/kg	9.9	1.5	1
2-Methylnaphthalene	ND		ug/kg	9.9	2.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	95		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-01  
 Client ID: LI-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 11:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 21:34  
 Analyst: SG  
 Percent Solids: 66%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.120	J	ng/g	0.665	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.665	0.061	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.333	0.052	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.665	0.070	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.333	0.060	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.333	0.081	1
Perfluorooctanoic Acid (PFOA)	0.121	JF	ng/g	0.333	0.056	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.665	0.239	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.665	0.182	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.333	0.100	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.333	0.173	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.333	0.089	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.665	0.382	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.398	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.665	0.268	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.665	0.062	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.665	0.204	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.665	0.130	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.665	0.112	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.665	0.093	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.665	0.272	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.665	0.072	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.3	5.07	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.33	0.055	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.33	0.160	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-01  
 Client ID: LI-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 11:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.33	0.228	1
PFAS, Total (6)	0.121	J	ng/g	0.333	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>179</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>187</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>69</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>240</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	37		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>9</b>	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	67		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	10		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-02  
 Client ID: LI-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 12:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 22:07  
 Analyst: SG  
 Percent Solids: 90%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.061	J	ng/g	0.520	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.520	0.048	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.260	0.041	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.04	0.067	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.520	0.055	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.04	0.087	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.260	0.047	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.260	0.063	1
Perfluorooctanoic Acid (PFOA)	0.047	JF	ng/g	0.260	0.044	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.520	0.187	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.520	0.142	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.260	0.078	1
Perfluorooctanesulfonic Acid (PFOS)	0.332		ng/g	0.260	0.135	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.260	0.070	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.520	0.298	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.04	0.311	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.520	0.209	1
Perfluoroundecanoic Acid (PFUnA)	0.057	J	ng/g	0.520	0.049	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.520	0.159	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.520	0.102	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.520	0.088	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.520	0.073	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.520	0.213	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.520	0.056	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.4	3.96	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.04	0.043	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.60	0.125	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-02  
 Client ID: LI-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 12:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.60	0.178	1
PFAS, Total (6)	0.379	J	ng/g	0.260	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	132		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	215	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	239	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	377	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	121		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	51		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-02 D  
 Client ID: LI-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 12:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/28/21 11:57  
 Analyst: JJW  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	13	J	ug/kg	36	7.6	5
2-Chloronaphthalene	ND		ug/kg	36	4.7	5
Fluoranthene	1900		ug/kg	36	2.5	5
Naphthalene	33	J	ug/kg	36	6.5	5
Benzo(a)anthracene	920		ug/kg	36	3.4	5
Benzo(a)pyrene	880		ug/kg	36	4.3	5
Benzo(b)fluoranthene	1200		ug/kg	36	3.4	5
Benzo(k)fluoranthene	510		ug/kg	36	3.2	5
Chrysene	950		ug/kg	36	2.7	5
Acenaphthylene	260		ug/kg	36	4.5	5
Anthracene	170		ug/kg	36	2.9	5
Benzo(ghi)perylene	620		ug/kg	36	3.1	5
Fluorene	52		ug/kg	36	4.3	5
Phenanthrene	770		ug/kg	36	3.1	5
Dibenzo(a,h)anthracene	130		ug/kg	36	3.6	5
Indeno(1,2,3-cd)pyrene	720		ug/kg	36	4.3	5
Pyrene	1700		ug/kg	36	2.5	5
1-Methylnaphthalene	14	J	ug/kg	36	5.6	5
2-Methylnaphthalene	14	J	ug/kg	36	10.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	105		30-120
4-Terphenyl-d14	106		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-03  
 Client ID: KN-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 13:30  
 Analyst: DV  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.3	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.3	1.1	1
Fluoranthene	ND		ug/kg	8.3	0.58	1
Naphthalene	ND		ug/kg	8.3	1.5	1
Benzo(a)anthracene	2.0	J	ug/kg	8.3	0.79	1
Benzo(a)pyrene	ND		ug/kg	8.3	1.0	1
Benzo(b)fluoranthene	ND		ug/kg	8.3	0.79	1
Benzo(k)fluoranthene	ND		ug/kg	8.3	0.75	1
Chrysene	ND		ug/kg	8.3	0.62	1
Acenaphthylene	ND		ug/kg	8.3	1.0	1
Anthracene	ND		ug/kg	8.3	0.66	1
Benzo(ghi)perylene	ND		ug/kg	8.3	0.71	1
Fluorene	ND		ug/kg	8.3	1.0	1
Phenanthrene	ND		ug/kg	8.3	0.71	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.3	0.83	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	8.3	1.0	1
Pyrene	ND		ug/kg	8.3	0.58	1
1-Methylnaphthalene	ND		ug/kg	8.3	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.3	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	106		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-03  
 Client ID: KN-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 22:40  
 Analyst: SG  
 Percent Solids: 78%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.632	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.632	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.316	0.049	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.26	0.082	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.632	0.066	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.26	0.105	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.316	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.316	0.076	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.316	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.632	0.227	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.632	0.172	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.316	0.095	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.316	0.164	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.316	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.632	0.362	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.26	0.378	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.632	0.254	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.632	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.632	0.193	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.632	0.124	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.632	0.107	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.632	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.632	0.258	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.632	0.068	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.6	4.81	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.26	0.052	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.16	0.152	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-03  
 Client ID: KN-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.16	0.216	1
PFAS, Total (6)	ND		ng/g	0.316	0.053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	158		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>168</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	<b>77</b>	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>301</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>6</b>	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	77		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	12		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-04  
 Client ID: KN-02\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 14:20  
 Analyst: DV  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.7	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.7	1.0	1
Fluoranthene	22		ug/kg	7.7	0.54	1
Naphthalene	1.6	J	ug/kg	7.7	1.4	1
Benzo(a)anthracene	31		ug/kg	7.7	0.73	1
Benzo(a)pyrene	19		ug/kg	7.7	0.92	1
Benzo(b)fluoranthene	24		ug/kg	7.7	0.73	1
Benzo(k)fluoranthene	7.0	J	ug/kg	7.7	0.69	1
Chrysene	15		ug/kg	7.7	0.58	1
Acenaphthylene	14		ug/kg	7.7	0.96	1
Anthracene	4.9	J	ug/kg	7.7	0.62	1
Benzo(ghi)perylene	17		ug/kg	7.7	0.65	1
Fluorene	1.8	J	ug/kg	7.7	0.92	1
Phenanthrene	7.6	J	ug/kg	7.7	0.65	1
Dibenzo(a,h)anthracene	4.2	J	ug/kg	7.7	0.77	1
Indeno(1,2,3-cd)pyrene	18		ug/kg	7.7	0.92	1
Pyrene	27		ug/kg	7.7	0.54	1
1-Methylnaphthalene	ND		ug/kg	7.7	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.7	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-04  
 Client ID: KN-02\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 22:57  
 Analyst: SG  
 Percent Solids: 85%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.040	J	ng/g	0.562	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.562	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.281	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.12	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.562	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.12	0.094	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.281	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.281	0.068	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.281	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.562	0.202	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.562	0.153	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.281	0.084	1
Perfluorooctanesulfonic Acid (PFOS)	0.154	J	ng/g	0.281	0.146	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.281	0.075	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.562	0.323	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.12	0.336	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.562	0.226	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.562	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.562	0.172	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.562	0.110	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.562	0.095	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.562	0.079	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.562	0.230	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.562	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.2	4.28	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.12	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.81	0.135	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-04  
 Client ID: KN-02\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.81	0.192	1
PFAS, Total (6)	0.154	J	ng/g	0.281	0.047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	136		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>236</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>261</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>365</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	117		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	87		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	55		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-05  
 Client ID: KN-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 15:00  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 14:36  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.9	1.9	1
2-Chloronaphthalene	ND		ug/kg	8.9	1.2	1
Fluoranthene	31		ug/kg	8.9	0.62	1
Naphthalene	ND		ug/kg	8.9	1.6	1
Benzo(a)anthracene	27		ug/kg	8.9	0.84	1
Benzo(a)pyrene	19		ug/kg	8.9	1.1	1
Benzo(b)fluoranthene	26		ug/kg	8.9	0.84	1
Benzo(k)fluoranthene	9.4		ug/kg	8.9	0.80	1
Chrysene	17		ug/kg	8.9	0.66	1
Acenaphthylene	9.1		ug/kg	8.9	1.1	1
Anthracene	3.6	J	ug/kg	8.9	0.71	1
Benzo(ghi)perylene	14		ug/kg	8.9	0.75	1
Fluorene	1.2	J	ug/kg	8.9	1.1	1
Phenanthrene	10		ug/kg	8.9	0.75	1
Dibenzo(a,h)anthracene	3.4	J	ug/kg	8.9	0.89	1
Indeno(1,2,3-cd)pyrene	16		ug/kg	8.9	1.1	1
Pyrene	31		ug/kg	8.9	0.62	1
1-Methylnaphthalene	ND		ug/kg	8.9	1.4	1
2-Methylnaphthalene	ND		ug/kg	8.9	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-05  
 Client ID: KN-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 15:00  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 23:30  
 Analyst: SG  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.057	J	ng/g	0.661	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.661	0.061	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.330	0.052	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.32	0.085	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.661	0.069	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.32	0.110	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.330	0.060	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.330	0.080	1
Perfluorooctanoic Acid (PFOA)	0.129	JF	ng/g	0.330	0.055	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.661	0.237	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.661	0.180	1
Perfluorononanoic Acid (PFNA)	0.133	JF	ng/g	0.330	0.099	1
Perfluorooctanesulfonic Acid (PFOS)	0.450		ng/g	0.330	0.172	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.330	0.089	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.661	0.379	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.32	0.395	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.661	0.266	1
Perfluoroundecanoic Acid (PFUnA)	0.120	JF	ng/g	0.661	0.062	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.661	0.202	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.661	0.129	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.661	0.112	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.661	0.093	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.661	0.270	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.661	0.071	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.2	5.03	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.32	0.055	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.30	0.158	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-05  
 Client ID: KN-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 15:00  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.30	0.226	1
PFAS, Total (6)	0.712	J	ng/g	0.330	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>201</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>216</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>266</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	33		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-06  
 Client ID: KN-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 08:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/24/21 17:19  
 Analyst: JJW  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 11/23/21 09:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.7	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.7	1.1	1
Fluoranthene	14		ug/kg	8.7	0.61	1
Naphthalene	2.8	J	ug/kg	8.7	1.6	1
Benzo(a)anthracene	16		ug/kg	8.7	0.82	1
Benzo(a)pyrene	9.5		ug/kg	8.7	1.0	1
Benzo(b)fluoranthene	12		ug/kg	8.7	0.82	1
Benzo(k)fluoranthene	4.1	J	ug/kg	8.7	0.78	1
Chrysene	10		ug/kg	8.7	0.65	1
Acenaphthylene	5.6	J	ug/kg	8.7	1.1	1
Anthracene	2.6	J	ug/kg	8.7	0.69	1
Benzo(ghi)perylene	8.1	J	ug/kg	8.7	0.74	1
Fluorene	1.0	J	ug/kg	8.7	1.0	1
Phenanthrene	7.7	J	ug/kg	8.7	0.74	1
Dibenzo(a,h)anthracene	1.8	J	ug/kg	8.7	0.87	1
Indeno(1,2,3-cd)pyrene	8.2	J	ug/kg	8.7	1.0	1
Pyrene	17		ug/kg	8.7	0.61	1
1-Methylnaphthalene	2.4	J	ug/kg	8.7	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.7	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	49		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-06  
 Client ID: KN-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 08:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/05/21 23:46  
 Analyst: SG  
 Percent Solids: 77%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.028	J	ng/g	0.591	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.591	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.295	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	0.076	JF	ng/g	0.591	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.295	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.295	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.295	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.591	0.212	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.591	0.161	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.295	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.265	J	ng/g	0.295	0.154	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.295	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.591	0.339	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.353	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.591	0.238	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.591	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.591	0.181	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.591	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.591	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.591	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.591	0.242	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.591	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.8	4.50	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.18	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.95	0.142	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-06  
 Client ID: KN-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 08:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.95	0.202	1
PFAS, Total (6)	0.265	J	ng/g	0.295	0.050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	175	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	184	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	294	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	32		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	72		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	26		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-07  
 Client ID: WL-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 14:52  
 Analyst: DV  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.2	1.5	1
2-Chloronaphthalene	ND		ug/kg	7.2	0.94	1
Fluoranthene	0.54	J	ug/kg	7.2	0.50	1
Naphthalene	ND		ug/kg	7.2	1.3	1
Benzo(a)anthracene	1.2	J	ug/kg	7.2	0.68	1
Benzo(a)pyrene	ND		ug/kg	7.2	0.86	1
Benzo(b)fluoranthene	1.2	J	ug/kg	7.2	0.68	1
Benzo(k)fluoranthene	ND		ug/kg	7.2	0.65	1
Chrysene	0.68	J	ug/kg	7.2	0.54	1
Acenaphthylene	ND		ug/kg	7.2	0.90	1
Anthracene	ND		ug/kg	7.2	0.58	1
Benzo(ghi)perylene	ND		ug/kg	7.2	0.61	1
Fluorene	ND		ug/kg	7.2	0.86	1
Phenanthrene	ND		ug/kg	7.2	0.61	1
Dibenzo(a,h)anthracene	ND		ug/kg	7.2	0.72	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	7.2	0.86	1
Pyrene	0.58	J	ug/kg	7.2	0.50	1
1-Methylnaphthalene	ND		ug/kg	7.2	1.1	1
2-Methylnaphthalene	ND		ug/kg	7.2	2.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-07  
 Client ID: WL-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 00:03  
 Analyst: SG  
 Percent Solids: 90%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.545	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.545	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.273	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.09	0.070	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.545	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.09	0.091	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.273	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.273	0.066	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.273	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.545	0.196	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.545	0.149	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.273	0.082	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.273	0.142	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.273	0.073	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.545	0.313	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.09	0.326	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.545	0.220	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.545	0.051	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.545	0.167	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.545	0.107	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.545	0.092	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.545	0.076	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.545	0.223	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.545	0.059	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.9	4.15	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.09	0.045	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.73	0.131	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-07  
 Client ID: WL-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:45  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.73	0.186	1
PFAS, Total (6)	ND		ng/g	0.273	0.046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	50	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	66	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	50	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	69	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	58	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	136		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	66	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	73	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	60	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	186	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	7	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	14	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	58		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	25		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-08  
 Client ID: WL-02\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 15:08  
 Analyst: DV  
 Percent Solids: 59%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	11	2.3	1
2-Chloronaphthalene	ND		ug/kg	11	1.4	1
Fluoranthene	12		ug/kg	11	0.77	1
Naphthalene	ND		ug/kg	11	2.0	1
Benzo(a)anthracene	13		ug/kg	11	1.0	1
Benzo(a)pyrene	9.3	J	ug/kg	11	1.3	1
Benzo(b)fluoranthene	15		ug/kg	11	1.0	1
Benzo(k)fluoranthene	4.9	J	ug/kg	11	0.99	1
Chrysene	7.8	J	ug/kg	11	0.83	1
Acenaphthylene	4.4	J	ug/kg	11	1.4	1
Anthracene	2.1	J	ug/kg	11	0.88	1
Benzo(ghi)perylene	10	J	ug/kg	11	0.94	1
Fluorene	ND		ug/kg	11	1.3	1
Phenanthrene	4.1	J	ug/kg	11	0.94	1
Dibenzo(a,h)anthracene	2.5	J	ug/kg	11	1.1	1
Indeno(1,2,3-cd)pyrene	11		ug/kg	11	1.3	1
Pyrene	12		ug/kg	11	0.77	1
1-Methylnaphthalene	ND		ug/kg	11	1.7	1
2-Methylnaphthalene	ND		ug/kg	11	3.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	75		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-08  
 Client ID: WL-02\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 00:20  
 Analyst: SG  
 Percent Solids: 59%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.274	J	ng/g	0.796	0.036	1
Perfluoropentanoic Acid (PFPeA)	0.563	J	ng/g	0.796	0.073	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.398	0.062	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.59	0.103	1
Perfluorohexanoic Acid (PFHxA)	0.481	J	ng/g	0.796	0.084	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.59	0.133	1
Perfluoroheptanoic Acid (PFHpA)	1.09		ng/g	0.398	0.072	1
Perfluorohexanesulfonic Acid (PFHxS)	0.212	J	ng/g	0.398	0.096	1
Perfluorooctanoic Acid (PFOA)	8.16		ng/g	0.398	0.067	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.796	0.286	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.449	J	ng/g	0.796	0.217	1
Perfluorononanoic Acid (PFNA)	14.0		ng/g	0.398	0.119	1
Perfluorooctanesulfonic Acid (PFOS)	113		ng/g	0.398	0.207	1
Perfluorodecanoic Acid (PFDA)	24.9		ng/g	0.398	0.107	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.962		ng/g	0.796	0.457	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.59	0.476	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.564	JF	ng/g	0.796	0.321	1
Perfluoroundecanoic Acid (PFUnA)	13.3		ng/g	0.796	0.075	1
Perfluorodecanesulfonic Acid (PFDS)	18.8		ng/g	0.796	0.244	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	5.24		ng/g	0.796	0.134	1
Perfluorododecanoic Acid (PFDoA)	4.89		ng/g	0.796	0.111	1
Perfluorotridecanoic Acid (PFTrDA)	1.18		ng/g	0.796	0.326	1
Perfluorotetradecanoic Acid (PFTA)	1.09	F	ng/g	0.796	0.086	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	15.9	6.07	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.59	0.066	1
Perfluorohexadecanoic Acid (PFHxDA)	0.338	J	ng/g	3.98	0.191	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.98	0.272	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-08  
 Client ID: WL-02\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	161	J	ng/g	0.398	0.067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	235	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	263	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	332	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	39		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-08  
 Client ID: WL-02\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 10:46  
 Analyst: RS  
 Percent Solids: 59%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
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Perfluorooctanesulfonamide (FOSA)	2.68		ng/g	0.796	0.156	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	119	Q	10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-09  
 Client ID: TB-1\_11032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/25/21 20:31  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/15/21 12:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	0.373	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.83	0.362	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	0.413	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.83	0.300	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	0.224	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.344	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.629	1
Perfluorononanoic Acid (PFNA)	1.02	J	ng/l	1.83	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	0.461	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.278	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.83	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.592	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.896	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.530	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.735	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.340	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.299	1
Perfluorotetradecanoic Acid (PFTA)	0.249	J	ng/l	1.83	0.227	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	45.7	20.8	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	0.307	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.66	1.13	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-09  
 Client ID: TB-1\_11032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.66	1.05	1
PFAS, Total (6)	1.02	J	ng/l	1.83	0.206	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	128		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	123		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	66		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-10  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 00:36  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.046	J	ng/g	0.566	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.566	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.283	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.13	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.566	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.13	0.095	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.283	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.283	0.069	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.283	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.566	0.203	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.566	0.155	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.283	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.283	0.147	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.283	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.566	0.325	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.13	0.339	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.566	0.228	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.566	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.566	0.173	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.566	0.111	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.566	0.096	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.566	0.079	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.566	0.232	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.566	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.3	4.32	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.13	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.83	0.136	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-10  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.83	0.194	1
PFAS, Total (6)	ND		ng/g	0.283	0.047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	129		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)	<b>233</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>262</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>451</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	77		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	46		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-10 D  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 13:58  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	120	J	ug/kg	160	34.	20
2-Chloronaphthalene	ND		ug/kg	160	21.	20
Fluoranthene	14000		ug/kg	160	11.	20
Naphthalene	430		ug/kg	160	29.	20
Benzo(a)anthracene	5400		ug/kg	160	16.	20
Benzo(a)pyrene	5100		ug/kg	160	20.	20
Benzo(b)fluoranthene	7100		ug/kg	160	16.	20
Benzo(k)fluoranthene	2300		ug/kg	160	15.	20
Chrysene	5900		ug/kg	160	12.	20
Acenaphthylene	2200		ug/kg	160	20.	20
Anthracene	970		ug/kg	160	13.	20
Benzo(ghi)perylene	3500		ug/kg	160	14.	20
Fluorene	520		ug/kg	160	20.	20
Phenanthrene	6800		ug/kg	160	14.	20
Dibenzo(a,h)anthracene	920		ug/kg	160	16.	20
Indeno(1,2,3-cd)pyrene	4000		ug/kg	160	20.	20
Pyrene	12000		ug/kg	160	11.	20
1-Methylnaphthalene	210		ug/kg	160	25.	20
2-Methylnaphthalene	240		ug/kg	160	46.	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-11  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 15:25  
 Analyst: DV  
 Percent Solids: 62%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	3.4	J	ug/kg	10	2.2	1
2-Chloronaphthalene	ND		ug/kg	10	1.4	1
Fluoranthene	620		ug/kg	10	0.73	1
Naphthalene	7.9	J	ug/kg	10	1.9	1
Benzo(a)anthracene	390		ug/kg	10	1.0	1
Benzo(a)pyrene	220		ug/kg	10	1.2	1
Benzo(b)fluoranthene	310		ug/kg	10	1.0	1
Benzo(k)fluoranthene	110		ug/kg	10	0.94	1
Chrysene	220		ug/kg	10	0.79	1
Acenaphthylene	100		ug/kg	10	1.3	1
Anthracene	48		ug/kg	10	0.84	1
Benzo(ghi)perylene	120		ug/kg	10	0.89	1
Fluorene	25		ug/kg	10	1.2	1
Phenanthrene	350		ug/kg	10	0.89	1
Dibenzo(a,h)anthracene	35		ug/kg	10	1.0	1
Indeno(1,2,3-cd)pyrene	170		ug/kg	10	1.2	1
Pyrene	470		ug/kg	10	0.73	1
1-Methylnaphthalene	6.0	J	ug/kg	10	1.6	1
2-Methylnaphthalene	5.1	J	ug/kg	10	3.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-11  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 00:53  
 Analyst: SG  
 Percent Solids: 62%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.131	J	ng/g	0.769	0.035	1
Perfluoropentanoic Acid (PFPeA)	0.160	J	ng/g	0.769	0.071	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.384	0.060	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.54	0.099	1
Perfluorohexanoic Acid (PFHxA)	13.7		ng/g	0.769	0.081	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.54	0.128	1
Perfluoroheptanoic Acid (PFHpA)	0.075	J	ng/g	0.384	0.069	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.384	0.093	1
Perfluorooctanoic Acid (PFOA)	0.179	J	ng/g	0.384	0.064	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.769	0.276	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.769	0.210	1
Perfluorononanoic Acid (PFNA)	0.181	J	ng/g	0.384	0.115	1
Perfluorooctanesulfonic Acid (PFOS)	0.326	J	ng/g	0.384	0.200	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.384	0.103	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.769	0.441	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.54	0.460	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.769	0.310	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.769	0.072	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.769	0.235	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.769	0.130	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.769	0.108	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.769	0.314	1
Perfluorotetradecanoic Acid (PFTa)	ND		ng/g	0.769	0.083	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	15.4	5.86	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.54	0.064	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.84	0.184	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.84	0.263	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-11  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	0.761	J	ng/g	0.384	0.064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>186</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>199</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>258</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	72		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	24		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-11  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 10:54  
 Analyst: RS  
 Percent Solids: 62%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.769	0.151	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	102		10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-13  
 Client ID: PI-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 14:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 15:42  
 Analyst: DV  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.0	1.5	1
2-Chloronaphthalene	ND		ug/kg	7.0	0.92	1
Fluoranthene	12		ug/kg	7.0	0.49	1
Naphthalene	ND		ug/kg	7.0	1.3	1
Benzo(a)anthracene	14		ug/kg	7.0	0.67	1
Benzo(a)pyrene	10		ug/kg	7.0	0.84	1
Benzo(b)fluoranthene	14		ug/kg	7.0	0.67	1
Benzo(k)fluoranthene	3.8	J	ug/kg	7.0	0.63	1
Chrysene	7.8		ug/kg	7.0	0.53	1
Acenaphthylene	5.7	J	ug/kg	7.0	0.88	1
Anthracene	2.6	J	ug/kg	7.0	0.56	1
Benzo(ghi)perylene	8.7		ug/kg	7.0	0.60	1
Fluorene	ND		ug/kg	7.0	0.84	1
Phenanthrene	3.4	J	ug/kg	7.0	0.60	1
Dibenzo(a,h)anthracene	1.9	J	ug/kg	7.0	0.70	1
Indeno(1,2,3-cd)pyrene	9.4		ug/kg	7.0	0.84	1
Pyrene	13		ug/kg	7.0	0.49	1
1-Methylnaphthalene	ND		ug/kg	7.0	1.1	1
2-Methylnaphthalene	ND		ug/kg	7.0	2.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-13  
 Client ID: PI-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 14:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 01:30  
 Analyst: SG  
 Percent Solids: 93%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.034	J	ng/g	0.490	0.022	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.490	0.045	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.245	0.038	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.980	0.063	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.490	0.051	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.980	0.082	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.245	0.044	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.245	0.059	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.245	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.490	0.176	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.490	0.134	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.245	0.074	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.245	0.127	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.245	0.066	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.490	0.281	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.980	0.293	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.490	0.197	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.490	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.490	0.150	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.490	0.096	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.490	0.083	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.490	0.069	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.490	0.200	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.490	0.053	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	9.80	3.73	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	0.980	0.041	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.45	0.118	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-13  
 Client ID: PI-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 14:50  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.45	0.168	1
PFAS, Total (6)	ND		ng/g	0.245	0.041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>197</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>223</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>316</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	36		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	58		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	37		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-14  
 Client ID: PI-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 08:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 15:58  
 Analyst: DV  
 Percent Solids: 71%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	5.6	J	ug/kg	9.2	1.9	1
2-Chloronaphthalene	ND		ug/kg	9.2	1.2	1
Fluoranthene	220		ug/kg	9.2	0.65	1
Naphthalene	3.5	J	ug/kg	9.2	1.7	1
Benzo(a)anthracene	120		ug/kg	9.2	0.88	1
Benzo(a)pyrene	91		ug/kg	9.2	1.1	1
Benzo(b)fluoranthene	120		ug/kg	9.2	0.88	1
Benzo(k)fluoranthene	42		ug/kg	9.2	0.83	1
Chrysene	92		ug/kg	9.2	0.69	1
Acenaphthylene	33		ug/kg	9.2	1.2	1
Anthracene	15		ug/kg	9.2	0.74	1
Benzo(ghi)perylene	68		ug/kg	9.2	0.79	1
Fluorene	9.3		ug/kg	9.2	1.1	1
Phenanthrene	120		ug/kg	9.2	0.79	1
Dibenzo(a,h)anthracene	14		ug/kg	9.2	0.92	1
Indeno(1,2,3-cd)pyrene	76		ug/kg	9.2	1.1	1
Pyrene	220		ug/kg	9.2	0.65	1
1-Methylnaphthalene	4.4	J	ug/kg	9.2	1.4	1
2-Methylnaphthalene	3.1	J	ug/kg	9.2	2.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	52		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-14  
 Client ID: PI-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 08:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 02:20  
 Analyst: SG  
 Percent Solids: 71%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.167	J	ng/g	0.673	0.031	1
Perfluoropentanoic Acid (PFPeA)	0.087	J	ng/g	0.673	0.062	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.336	0.053	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.34	0.087	1
Perfluorohexanoic Acid (PFHxA)	0.081	JF	ng/g	0.673	0.071	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.34	0.112	1
Perfluoroheptanoic Acid (PFHpA)	0.113	J	ng/g	0.336	0.061	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.336	0.081	1
Perfluorooctanoic Acid (PFOA)	0.220	JF	ng/g	0.336	0.056	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.673	0.241	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.673	0.184	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.336	0.101	1
Perfluorooctanesulfonic Acid (PFOS)	0.204	J	ng/g	0.336	0.175	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.336	0.090	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.673	0.386	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.34	0.402	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.673	0.271	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.673	0.063	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.673	0.206	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.673	0.132	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.673	0.114	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.673	0.094	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.673	0.275	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.673	0.073	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.4	5.12	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.34	0.056	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.36	0.161	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-14  
 Client ID: PI-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 08:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.36	0.230	1
PFAS, Total (6)	0.537	J	ng/g	0.336	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	170	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	62	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	201	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	353	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	23	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	20	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	69		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	23		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-15  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 02:36  
 Analyst: SG  
 Percent Solids: 86%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.027	J	ng/g	0.539	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.539	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.269	0.042	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.08	0.070	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.539	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.08	0.090	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.269	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.269	0.065	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.269	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.539	0.193	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.539	0.147	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.269	0.081	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.269	0.140	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.269	0.072	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.539	0.309	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.08	0.322	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.539	0.217	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.539	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.539	0.165	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.539	0.106	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.539	0.091	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.539	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.539	0.220	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.539	0.058	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.8	4.11	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.08	0.045	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.69	0.129	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-15  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.69	0.184	1
PFAS, Total (6)	ND		ng/g	0.269	0.045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>192</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>224</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>371</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	36		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	55		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	37		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-15 D  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/29/21 17:06  
 Analyst: DV  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 11/23/21 20:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	60	J	ug/kg	77	16.	10
2-Chloronaphthalene	ND		ug/kg	77	10.	10
Fluoranthene	4600		ug/kg	77	5.4	10
Naphthalene	28	J	ug/kg	77	14.	10
Benzo(a)anthracene	2000		ug/kg	77	7.3	10
Benzo(a)pyrene	1500		ug/kg	77	9.2	10
Benzo(b)fluoranthene	2000		ug/kg	77	7.3	10
Benzo(k)fluoranthene	780		ug/kg	77	6.9	10
Chrysene	1700		ug/kg	77	5.7	10
Acenaphthylene	520		ug/kg	77	9.6	10
Anthracene	680		ug/kg	77	6.1	10
Benzo(ghi)perylene	830		ug/kg	77	6.5	10
Fluorene	300		ug/kg	77	9.2	10
Phenanthrene	2800		ug/kg	77	6.5	10
Dibenzo(a,h)anthracene	250		ug/kg	77	7.7	10
Indeno(1,2,3-cd)pyrene	980		ug/kg	77	9.2	10
Pyrene	3600		ug/kg	77	5.4	10
1-Methylnaphthalene	38	J	ug/kg	77	12.	10
2-Methylnaphthalene	33	J	ug/kg	77	22.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	52		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-16  
 Client ID: SO-03\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 11:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/27/21 19:55  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 11/24/21 15:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.9	1.7	1
2-Chloronaphthalene	ND		ug/kg	7.9	1.0	1
Fluoranthene	16		ug/kg	7.9	0.55	1
Naphthalene	ND		ug/kg	7.9	1.4	1
Benzo(a)anthracene	6.1	J	ug/kg	7.9	0.75	1
Benzo(a)pyrene	6.4	J	ug/kg	7.9	0.95	1
Benzo(b)fluoranthene	9.5		ug/kg	7.9	0.75	1
Benzo(k)fluoranthene	3.6	J	ug/kg	7.9	0.71	1
Chrysene	7.2	J	ug/kg	7.9	0.59	1
Acenaphthylene	2.4	J	ug/kg	7.9	0.99	1
Anthracene	1.1	J	ug/kg	7.9	0.63	1
Benzo(ghi)perylene	5.6	J	ug/kg	7.9	0.67	1
Fluorene	ND		ug/kg	7.9	0.95	1
Phenanthrene	7.7	J	ug/kg	7.9	0.67	1
Dibenzo(a,h)anthracene	1.0	J	ug/kg	7.9	0.79	1
Indeno(1,2,3-cd)pyrene	5.9	J	ug/kg	7.9	0.95	1
Pyrene	15		ug/kg	7.9	0.55	1
1-Methylnaphthalene	ND		ug/kg	7.9	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.9	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-16  
 Client ID: SO-03\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 11:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 02:53  
 Analyst: SG  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.532	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.532	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.266	0.042	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.06	0.069	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.532	0.056	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.06	0.089	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.266	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.266	0.064	1
Perfluorooctanoic Acid (PFOA)	0.047	JF	ng/g	0.266	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.532	0.191	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.532	0.145	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.266	0.080	1
Perfluorooctanesulfonic Acid (PFOS)	0.164	J	ng/g	0.266	0.138	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.266	0.071	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.532	0.306	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.06	0.318	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.532	0.215	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.532	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.532	0.163	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.532	0.104	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.532	0.090	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.532	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.532	0.218	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.532	0.058	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.6	4.06	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.06	0.044	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.66	0.128	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-16  
 Client ID: SO-03\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 11:30  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.66	0.182	1
PFAS, Total (6)	0.211	J	ng/g	0.266	0.045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	216	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	226	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	295	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	46		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-17  
 Client ID: YO-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 10:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/22/21 20:13  
 Analyst: JJW  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.6	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.6	0.99	1
Fluoranthene	4.2	J	ug/kg	7.6	0.53	1
Naphthalene	ND		ug/kg	7.6	1.4	1
Benzo(a)anthracene	2.1	J	ug/kg	7.6	0.72	1
Benzo(a)pyrene	1.9	J	ug/kg	7.6	0.91	1
Benzo(b)fluoranthene	2.4	J	ug/kg	7.6	0.72	1
Benzo(k)fluoranthene	1.3	J	ug/kg	7.6	0.68	1
Chrysene	2.2	J	ug/kg	7.6	0.57	1
Acenaphthylene	ND		ug/kg	7.6	0.95	1
Anthracene	0.68	J	ug/kg	7.6	0.61	1
Benzo(ghi)perylene	1.3	J	ug/kg	7.6	0.64	1
Fluorene	ND		ug/kg	7.6	0.91	1
Phenanthrene	2.6	J	ug/kg	7.6	0.64	1
Dibenzo(a,h)anthracene	0.91	J	ug/kg	7.6	0.76	1
Indeno(1,2,3-cd)pyrene	1.6	J	ug/kg	7.6	0.91	1
Pyrene	3.6	J	ug/kg	7.6	0.53	1
1-Methylnaphthalene	ND		ug/kg	7.6	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.6	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	81		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-17  
 Client ID: YO-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 10:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 03:09  
 Analyst: SG  
 Percent Solids: 86%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.560	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.560	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.280	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.12	0.072	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.560	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.12	0.094	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.280	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.280	0.068	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.280	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.560	0.201	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.560	0.153	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.280	0.084	1
Perfluorooctanesulfonic Acid (PFOS)	0.227	J	ng/g	0.280	0.146	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.280	0.075	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.560	0.321	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.12	0.335	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.560	0.226	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.560	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.560	0.171	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.560	0.095	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.560	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.560	0.229	1
Perfluorotetradecanoic Acid (PFTDA)	ND		ng/g	0.560	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.2	4.26	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.12	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.80	0.134	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.80	0.191	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-17  
 Client ID: YO-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 10:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
PFAS, Total (6)	0.227	J	ng/g	0.280	0.047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	39	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	57	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	186	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	45	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	207	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	372	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	39		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	41		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-17  
 Client ID: YO-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 10:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 11:01  
 Analyst: RS  
 Percent Solids: 86%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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## Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.560	0.110	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
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Perfluoro[13C8]Octanesulfonamide (M8FOSA)	114		10-117
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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-18  
 Client ID: YO-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 11:14  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/22/21 20:29  
 Analyst: JJW  
 Percent Solids: 65%

Extraction Method: EPA 3546  
 Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	10	2.1	1
2-Chloronaphthalene	ND		ug/kg	10	1.3	1
Fluoranthene	6.1	J	ug/kg	10	0.70	1
Naphthalene	2.6	J	ug/kg	10	1.8	1
Benzo(a)anthracene	2.4	J	ug/kg	10	0.95	1
Benzo(a)pyrene	2.4	J	ug/kg	10	1.2	1
Benzo(b)fluoranthene	3.7	J	ug/kg	10	0.95	1
Benzo(k)fluoranthene	1.5	J	ug/kg	10	0.90	1
Chrysene	3.0	J	ug/kg	10	0.75	1
Acenaphthylene	ND		ug/kg	10	1.2	1
Anthracene	0.85	J	ug/kg	10	0.80	1
Benzo(ghi)perylene	2.0	J	ug/kg	10	0.85	1
Fluorene	ND		ug/kg	10	1.2	1
Phenanthrene	3.6	J	ug/kg	10	0.85	1
Dibenzo(a,h)anthracene	ND		ug/kg	10	1.0	1
Indeno(1,2,3-cd)pyrene	2.2	J	ug/kg	10	1.2	1
Pyrene	5.8	J	ug/kg	10	0.70	1
1-Methylnaphthalene	2.9	J	ug/kg	10	1.6	1
2-Methylnaphthalene	4.7	J	ug/kg	10	2.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-18  
 Client ID: YO-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 11:14  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 03:26  
 Analyst: SG  
 Percent Solids: 65%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.116	J	ng/g	0.680	0.031	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.680	0.063	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.340	0.053	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.36	0.088	1
Perfluorohexanoic Acid (PFHxA)	0.127	J	ng/g	0.680	0.071	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.36	0.114	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.340	0.061	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.340	0.082	1
Perfluorooctanoic Acid (PFOA)	0.201	J	ng/g	0.340	0.057	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.680	0.244	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.680	0.186	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.340	0.102	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.340	0.177	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.340	0.091	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.680	0.390	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.36	0.407	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.680	0.274	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.680	0.064	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.680	0.208	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.680	0.133	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.680	0.115	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.680	0.095	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.680	0.278	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.680	0.074	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.6	5.18	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.36	0.056	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.40	0.163	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-18  
 Client ID: YO-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 11:14  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.40	0.233	1
PFAS, Total (6)	0.201	J	ng/g	0.340	0.057	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	16	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	22	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	25	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	36		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	17	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	20	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	27	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	21	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	42		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	24	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	27	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	20	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	51		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	1	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	24	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	3	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	19	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	15	Q	24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	17		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	9	Q	10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-19  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/22/21 20:46  
 Analyst: JJW  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 00:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.6	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.6	1.1	1
Fluoranthene	85		ug/kg	8.6	0.60	1
Naphthalene	1.7	J	ug/kg	8.6	1.6	1
Benzo(a)anthracene	35		ug/kg	8.6	0.82	1
Benzo(a)pyrene	43		ug/kg	8.6	1.0	1
Benzo(b)fluoranthene	61		ug/kg	8.6	0.82	1
Benzo(k)fluoranthene	24		ug/kg	8.6	0.78	1
Chrysene	46		ug/kg	8.6	0.65	1
Acenaphthylene	10		ug/kg	8.6	1.1	1
Anthracene	6.7	J	ug/kg	8.6	0.69	1
Benzo(ghi)perylene	29		ug/kg	8.6	0.73	1
Fluorene	1.9	J	ug/kg	8.6	1.0	1
Phenanthrene	30		ug/kg	8.6	0.73	1
Dibenzo(a,h)anthracene	5.3	J	ug/kg	8.6	0.86	1
Indeno(1,2,3-cd)pyrene	32		ug/kg	8.6	1.0	1
Pyrene	73		ug/kg	8.6	0.60	1
1-Methylnaphthalene	ND		ug/kg	8.6	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.6	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	87		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-19  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 03:42  
 Analyst: SG  
 Percent Solids: 75%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.173	J	ng/g	0.635	0.029	1
Perfluoropentanoic Acid (PFPeA)	0.064	J	ng/g	0.635	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.317	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.27	0.082	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.635	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.27	0.106	1
Perfluoroheptanoic Acid (PFHpA)	0.060	J	ng/g	0.317	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.317	0.077	1
Perfluorooctanoic Acid (PFOA)	0.066	JF	ng/g	0.317	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.635	0.228	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.635	0.173	1
Perfluorononanoic Acid (PFNA)	0.152	J	ng/g	0.317	0.095	1
Perfluorooctanesulfonic Acid (PFOS)	0.491		ng/g	0.317	0.165	1
Perfluorodecanoic Acid (PFDA)	0.110	JF	ng/g	0.317	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.635	0.364	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.27	0.380	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.635	0.256	1
Perfluoroundecanoic Acid (PFUnA)	0.081	JF	ng/g	0.635	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.635	0.194	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.635	0.107	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.635	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.635	0.260	1
Perfluorotetradecanoic Acid (PFTa)	ND		ng/g	0.635	0.069	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.7	4.84	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.27	0.052	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.17	0.152	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.17	0.217	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-19  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
PFAS, Total (6)	0.879	J	ng/g	0.317	0.053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	49	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	68		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	71	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	220	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	48	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	54	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	194	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	63	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	269	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	21	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	27	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	38		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	29		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-19  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 11:15  
 Analyst: RS  
 Percent Solids: 75%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.635	0.124	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			106		10-117	

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-20  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/22/21 21:02  
 Analyst: JJW  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	6.8	1.4	1
2-Chloronaphthalene	ND		ug/kg	6.8	0.89	1
Fluoranthene	1.6	J	ug/kg	6.8	0.48	1
Naphthalene	ND		ug/kg	6.8	1.2	1
Benzo(a)anthracene	1.3	J	ug/kg	6.8	0.65	1
Benzo(a)pyrene	1.1	J	ug/kg	6.8	0.82	1
Benzo(b)fluoranthene	1.4	J	ug/kg	6.8	0.65	1
Benzo(k)fluoranthene	ND		ug/kg	6.8	0.62	1
Chrysene	1.0	J	ug/kg	6.8	0.51	1
Acenaphthylene	ND		ug/kg	6.8	0.86	1
Anthracene	ND		ug/kg	6.8	0.55	1
Benzo(ghi)perylene	0.72	J	ug/kg	6.8	0.58	1
Fluorene	ND		ug/kg	6.8	0.82	1
Phenanthrene	0.58	J	ug/kg	6.8	0.58	1
Dibenzo(a,h)anthracene	ND		ug/kg	6.8	0.68	1
Indeno(1,2,3-cd)pyrene	0.82	J	ug/kg	6.8	0.82	1
Pyrene	1.5	J	ug/kg	6.8	0.48	1
1-Methylnaphthalene	ND		ug/kg	6.8	1.1	1
2-Methylnaphthalene	ND		ug/kg	6.8	2.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-20  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 03:59  
 Analyst: SG  
 Percent Solids: 95%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.490	0.022	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.490	0.045	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.245	0.038	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.980	0.063	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.490	0.052	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.980	0.082	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.245	0.044	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.245	0.059	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.245	0.041	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.490	0.176	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.490	0.134	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.245	0.074	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.245	0.127	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.245	0.066	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.490	0.281	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.980	0.293	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.490	0.198	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.490	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.490	0.150	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.490	0.083	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.490	0.069	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.490	0.200	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.490	0.053	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	9.80	3.74	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	0.980	0.041	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.45	0.118	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.45	0.168	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-20  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	ND		ng/g	0.245	0.041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>222</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>239</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>285</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	67		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	35		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-20  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 11:23  
 Analyst: RS  
 Percent Solids: 95%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.490	0.096	1
Surrogate			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			125	Q	10-117	

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-21  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/22/21 21:19  
 Analyst: JJW  
 Percent Solids: 67%

Extraction Method: EPA 3546  
 Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	2.6	J	ug/kg	9.8	2.1	1
2-Chloronaphthalene	ND		ug/kg	9.8	1.3	1
Fluoranthene	130		ug/kg	9.8	0.69	1
Naphthalene	6.1	J	ug/kg	9.8	1.8	1
Benzo(a)anthracene	59		ug/kg	9.8	0.93	1
Benzo(a)pyrene	64		ug/kg	9.8	1.2	1
Benzo(b)fluoranthene	77		ug/kg	9.8	0.93	1
Benzo(k)fluoranthene	29		ug/kg	9.8	0.88	1
Chrysene	66		ug/kg	9.8	0.74	1
Acenaphthylene	21		ug/kg	9.8	1.2	1
Anthracene	14		ug/kg	9.8	0.79	1
Benzo(ghi)perylene	36		ug/kg	9.8	0.84	1
Fluorene	6.8	J	ug/kg	9.8	1.2	1
Phenanthrene	75		ug/kg	9.8	0.84	1
Dibenzo(a,h)anthracene	7.4	J	ug/kg	9.8	0.98	1
Indeno(1,2,3-cd)pyrene	39		ug/kg	9.8	1.2	1
Pyrene	130		ug/kg	9.8	0.69	1
1-Methylnaphthalene	4.4	J	ug/kg	9.8	1.5	1
2-Methylnaphthalene	3.6	J	ug/kg	9.8	2.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	43		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-21  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/06/21 04:15  
 Analyst: SG  
 Percent Solids: 67%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.108	J	ng/g	0.658	0.030	1
Perfluoropentanoic Acid (PFPeA)	0.118	J	ng/g	0.658	0.061	1
Perfluorobutanesulfonic Acid (PFBS)	0.074	J	ng/g	0.329	0.051	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.32	0.085	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.658	0.069	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.32	0.110	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.329	0.059	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.329	0.080	1
Perfluorooctanoic Acid (PFOA)	0.260	J	ng/g	0.329	0.055	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.658	0.236	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.658	0.180	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.329	0.099	1
Perfluorooctanesulfonic Acid (PFOS)	0.735		ng/g	0.329	0.171	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.329	0.088	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.658	0.378	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.32	0.393	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.658	0.265	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.658	0.062	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.658	0.201	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.658	0.111	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.658	0.092	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.658	0.269	1
Perfluorotetradecanoic Acid (PFTDA)	ND		ng/g	0.658	0.071	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.2	5.01	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.32	0.054	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.29	0.158	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.29	0.225	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-21  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	0.995	J	ng/g	0.329	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	129		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>241</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>265</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>337</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	72		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	41		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-21  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/08/21 12:17  
 Analyst: RS  
 Percent Solids: 67%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
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Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.658	0.129	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
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Perfluoro[13C8]Octanesulfonamide (M8FOSA)	110		10-117
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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-22  
 Client ID: CU-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 15:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/29/21 17:22  
 Analyst: DV  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.6	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.6	1.1	1
Fluoranthene	120		ug/kg	8.6	0.60	1
Naphthalene	6.4	J	ug/kg	8.6	1.5	1
Benzo(a)anthracene	54		ug/kg	8.6	0.81	1
Benzo(a)pyrene	56		ug/kg	8.6	1.0	1
Benzo(b)fluoranthene	69		ug/kg	8.6	0.81	1
Benzo(k)fluoranthene	33		ug/kg	8.6	0.77	1
Chrysene	55		ug/kg	8.6	0.64	1
Acenaphthylene	11		ug/kg	8.6	1.1	1
Anthracene	12		ug/kg	8.6	0.68	1
Benzo(ghi)perylene	36		ug/kg	8.6	0.73	1
Fluorene	3.4	J	ug/kg	8.6	1.0	1
Phenanthrene	48		ug/kg	8.6	0.73	1
Dibenzo(a,h)anthracene	7.6	J	ug/kg	8.6	0.86	1
Indeno(1,2,3-cd)pyrene	45		ug/kg	8.6	1.0	1
Pyrene	110		ug/kg	8.6	0.60	1
1-Methylnaphthalene	3.0	J	ug/kg	8.6	1.3	1
2-Methylnaphthalene	3.9	J	ug/kg	8.6	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	30		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-22  
 Client ID: CU-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 15:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/18/21 17:37  
 Analyst: RS  
 Percent Solids: 78%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.456	J	ng/g	0.606	0.028	1
Perfluoropentanoic Acid (PFPeA)	1.58		ng/g	0.606	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.303	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.21	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.656		ng/g	0.606	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.21	0.101	1
Perfluoroheptanoic Acid (PFHpA)	0.210	J	ng/g	0.303	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.303	0.073	1
Perfluorooctanoic Acid (PFOA)	0.238	JF	ng/g	0.303	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.606	0.218	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.606	0.166	1
Perfluorononanoic Acid (PFNA)	0.181	JF	ng/g	0.303	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	1.23		ng/g	0.303	0.158	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.303	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.606	0.348	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.21	0.363	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.606	0.244	1
Perfluoroundecanoic Acid (PFUnA)	0.063	JF	ng/g	0.606	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.606	0.186	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.606	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.606	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.606	0.248	1
Perfluorotetradecanoic Acid (PFTDA)	ND		ng/g	0.606	0.066	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.1	4.62	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.21	0.050	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.03	0.146	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.03	0.207	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-22  
 Client ID: CU-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 15:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	1.86	J	ng/g	0.303	0.051	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	33		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	27		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	34		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	28	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	26	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	150		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	144		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-22  
 Client ID: CU-02\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 15:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/20/21 02:25  
 Analyst: HT  
 Percent Solids: 78%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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## Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.606	0.119	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	130	Q	10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-23  
 Client ID: SA-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 08:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 16:15  
 Analyst: DV  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.7	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.7	1.0	1
Fluoranthene	23		ug/kg	7.7	0.54	1
Naphthalene	ND		ug/kg	7.7	1.4	1
Benzo(a)anthracene	18		ug/kg	7.7	0.73	1
Benzo(a)pyrene	11		ug/kg	7.7	0.93	1
Benzo(b)fluoranthene	16		ug/kg	7.7	0.73	1
Benzo(k)fluoranthene	5.1	J	ug/kg	7.7	0.70	1
Chrysene	13		ug/kg	7.7	0.58	1
Acenaphthylene	6.8	J	ug/kg	7.7	0.97	1
Anthracene	2.6	J	ug/kg	7.7	0.62	1
Benzo(ghi)perylene	8.6		ug/kg	7.7	0.66	1
Fluorene	1.1	J	ug/kg	7.7	0.93	1
Phenanthrene	12		ug/kg	7.7	0.66	1
Dibenzo(a,h)anthracene	1.9	J	ug/kg	7.7	0.77	1
Indeno(1,2,3-cd)pyrene	9.4		ug/kg	7.7	0.93	1
Pyrene	24		ug/kg	7.7	0.54	1
1-Methylnaphthalene	ND		ug/kg	7.7	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.7	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	73		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-23  
 Client ID: SA-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 08:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/18/21 18:10  
 Analyst: RS  
 Percent Solids: 85%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.120	J	ng/g	0.538	0.024	1
Perfluoropentanoic Acid (PFPeA)	0.074	J	ng/g	0.538	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.269	0.042	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.08	0.070	1
Perfluorohexanoic Acid (PFHxA)	0.080	J	ng/g	0.538	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.08	0.090	1
Perfluoroheptanoic Acid (PFHpA)	0.067	J	ng/g	0.269	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.269	0.065	1
Perfluorooctanoic Acid (PFOA)	0.168	J	ng/g	0.269	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.538	0.193	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.538	0.147	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.269	0.081	1
Perfluorooctanesulfonic Acid (PFOS)	0.222	J	ng/g	0.269	0.140	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.269	0.072	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.538	0.309	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.08	0.322	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.538	0.217	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.538	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.538	0.165	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.538	0.106	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.538	0.091	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.538	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.538	0.220	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.538	0.058	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.8	4.10	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.08	0.045	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.69	0.129	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-23  
 Client ID: SA-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 08:40  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.69	0.184	1
PFAS, Total (6)	0.457	J	ng/g	0.269	0.045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	28		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	24		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	15	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	31		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	162		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	89		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-24  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/18/21 18:43  
 Analyst: RS  
 Percent Solids: 76%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.097	J	ng/g	0.635	0.029	1
Perfluoropentanoic Acid (PFPeA)	0.063	J	ng/g	0.635	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.317	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.27	0.082	1
Perfluorohexanoic Acid (PFHxA)	0.072	JF	ng/g	0.635	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.27	0.106	1
Perfluoroheptanoic Acid (PFHpA)	0.067	J	ng/g	0.317	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.317	0.077	1
Perfluorooctanoic Acid (PFOA)	0.131	JF	ng/g	0.317	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.635	0.228	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.635	0.173	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.317	0.095	1
Perfluorooctanesulfonic Acid (PFOS)	0.420		ng/g	0.317	0.165	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.317	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.635	0.364	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.27	0.380	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.635	0.256	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.635	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.635	0.194	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.635	0.124	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.635	0.107	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.635	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.635	0.260	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.635	0.069	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.7	4.84	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.27	0.052	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.17	0.152	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-24  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.17	0.217	1
PFAS, Total (6)	0.618	J	ng/g	0.317	0.053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	25		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>72</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	24		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>68</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	22		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>17</b>	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>8</b>	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>28</b>	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	129		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	91		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-24 D  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 22:01  
 Analyst: DV  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	17	3.6	2
2-Chloronaphthalene	ND		ug/kg	17	2.2	2
Fluoranthene	27		ug/kg	17	1.2	2
Naphthalene	ND		ug/kg	17	3.1	2
Benzo(a)anthracene	62		ug/kg	17	1.6	2
Benzo(a)pyrene	15	J	ug/kg	17	2.1	2
Benzo(b)fluoranthene	24		ug/kg	17	1.6	2
Benzo(k)fluoranthene	6.0	J	ug/kg	17	1.6	2
Chrysene	25		ug/kg	17	1.3	2
Acenaphthylene	15	J	ug/kg	17	2.2	2
Anthracene	5.8	J	ug/kg	17	1.4	2
Benzo(ghi)perylene	16	J	ug/kg	17	1.5	2
Fluorene	2.9	J	ug/kg	17	2.1	2
Phenanthrene	13	J	ug/kg	17	1.5	2
Dibenzo(a,h)anthracene	4.6	J	ug/kg	17	1.7	2
Indeno(1,2,3-cd)pyrene	12	J	ug/kg	17	2.1	2
Pyrene	31		ug/kg	17	1.2	2
1-Methylnaphthalene	ND		ug/kg	17	2.7	2
2-Methylnaphthalene	ND		ug/kg	17	4.9	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-25  
 Client ID: LI-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 10:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/23/21 16:31  
 Analyst: DV  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.3	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.3	1.1	1
Fluoranthene	6.4	J	ug/kg	8.3	0.58	1
Naphthalene	ND		ug/kg	8.3	1.5	1
Benzo(a)anthracene	5.2	J	ug/kg	8.3	0.78	1
Benzo(a)pyrene	3.2	J	ug/kg	8.3	0.99	1
Benzo(b)fluoranthene	4.2	J	ug/kg	8.3	0.78	1
Benzo(k)fluoranthene	1.5	J	ug/kg	8.3	0.74	1
Chrysene	3.1	J	ug/kg	8.3	0.62	1
Acenaphthylene	1.6	J	ug/kg	8.3	1.0	1
Anthracene	0.87	J	ug/kg	8.3	0.66	1
Benzo(ghi)perylene	2.4	J	ug/kg	8.3	0.70	1
Fluorene	ND		ug/kg	8.3	0.99	1
Phenanthrene	2.8	J	ug/kg	8.3	0.70	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.3	0.83	1
Indeno(1,2,3-cd)pyrene	2.6	J	ug/kg	8.3	0.99	1
Pyrene	6.3	J	ug/kg	8.3	0.58	1
1-Methylnaphthalene	ND		ug/kg	8.3	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.3	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-25  
 Client ID: LI-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 10:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/18/21 19:00  
 Analyst: RS  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.114	J	ng/g	0.550	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.055	J	ng/g	0.550	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.275	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.10	0.071	1
Perfluorohexanoic Acid (PFHxA)	0.073	J	ng/g	0.550	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.10	0.092	1
Perfluoroheptanoic Acid (PFHpA)	0.066	J	ng/g	0.275	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.275	0.067	1
Perfluorooctanoic Acid (PFOA)	0.149	JF	ng/g	0.275	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.550	0.198	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.550	0.150	1
Perfluorononanoic Acid (PFNA)	0.265	JF	ng/g	0.275	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.370		ng/g	0.275	0.143	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.275	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.550	0.316	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.10	0.329	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.550	0.222	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.550	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.550	0.168	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.550	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.550	0.093	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.550	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.550	0.225	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.550	0.059	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.0	4.19	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.10	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.75	0.132	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-25  
 Client ID: LI-01\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 10:35  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.75	0.188	1
PFAS, Total (6)	0.850	J	ng/g	0.275	0.046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	27		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	24		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	19		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	12	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	33	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	106		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	161		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	133		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-26  
 Client ID: TB-2\_11032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/25/21 20:47  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/15/21 12:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.214	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.407	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.620	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.80	0.281	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.80	0.454	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.584	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.234	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.883	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.522	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.724	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.335	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.223	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	45.0	20.4	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.80	0.303	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.60	1.12	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-26  
 Client ID: TB-2\_11032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.60	1.03	1
PFAS, Total (6)	ND		ng/l	1.80	0.203	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	110		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-27  
 Client ID: EB-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:38  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/17/21 19:04  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 11/15/21 09:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
1-Methylnaphthalene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	83		15-120
4-Terphenyl-d14	92		41-149

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-27  
 Client ID: EB-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:38  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/25/21 21:04  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/15/21 12:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.427	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.310	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.232	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.650	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.476	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.287	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.612	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.926	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.548	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.759	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.351	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.309	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.234	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.2	21.4	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.89	0.317	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.78	1.17	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-27  
 Client ID: EB-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:38  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.78	1.08	1
PFAS, Total (6)	ND		ng/l	1.89	0.213	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	181	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	125		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	122		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	73		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-28  
 Client ID: FB-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:46  
 Date Received: 11/12/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/25/21 21:20  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/15/21 12:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.75	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.395	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.75	0.287	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.214	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.602	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.441	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.980	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.567	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.857	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.507	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.703	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	0.276	J	ng/l	1.75	0.217	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.7	19.8	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.75	0.294	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.50	1.08	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

Lab ID: L2162323-28  
 Client ID: FB-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:46  
 Date Received: 11/12/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.50	1.00	1
PFAS, Total (6)	ND		ng/l	1.75	0.197	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	102		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	103		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	115		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	76		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/17/21 18:45  
Analyst: DV

Extraction Method: EPA 3510C  
Extraction Date: 11/15/21 09:23

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 27 Batch: WG1571434-1					
Acenaphthene	ND		ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	ND		ug/l	0.10	0.02
Naphthalene	ND		ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	ND		ug/l	0.10	0.01
Anthracene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.10	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
1-Methylnaphthalene	ND		ug/l	0.10	0.02
2-Methylnaphthalene	ND		ug/l	0.10	0.02

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	87		15-120
4-Terphenyl-d14	93		41-149



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/25/21 14:26  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 11/15/21 12:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09,26-28 Batch: WG1571478-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.456	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/25/21 14:26  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 11/15/21 12:07

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09,26-28 Batch: WG1571478-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	100		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/05/21 21:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08,10-11,13-21 Batch: WG1571865-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/05/21 21:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08,10-11,13-21 Batch: WG1571865-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	125		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>195</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>223</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>327</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	67		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	35		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/07/21 10:29  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 07:39

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-08,10-11,13-21 Batch: WG1571865-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	106		10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/18/21 12:50  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 22-25 Batch: WG1572400-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/18/21 12:50  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 22-25 Batch: WG1572400-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		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)	31		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	24		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	155		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	123		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/20/21 02:10  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 11/17/21 09:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 22-25 Batch: WG1572400-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	155	Q	10-117
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	161	Q	10-146
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	184	Q	10-145
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	197	Q	10-146
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	224	Q	10-129



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/22/21 19:57  
Analyst: JJW

Extraction Method: EPA 3546  
Extraction Date: 11/21/21 19:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 17-22 Batch: WG1574236-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	0.66	J	ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	0.56	J	ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	1.2	J	ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	99		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/23/21 12:07  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/22/21 16:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-08,10-11,13-14,23-25 Batch: WG1574653-1					
Acenaphthene	ND		ug/kg	6.5	1.4
2-Chloronaphthalene	ND		ug/kg	6.5	0.84
Fluoranthene	ND		ug/kg	6.5	0.45
Naphthalene	ND		ug/kg	6.5	1.2
Benzo(a)anthracene	ND		ug/kg	6.5	0.62
Benzo(a)pyrene	ND		ug/kg	6.5	0.78
Benzo(b)fluoranthene	ND		ug/kg	6.5	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.5	0.58
Chrysene	ND		ug/kg	6.5	0.49
Acenaphthylene	ND		ug/kg	6.5	0.81
Anthracene	ND		ug/kg	6.5	0.52
Benzo(ghi)perylene	ND		ug/kg	6.5	0.55
Fluorene	ND		ug/kg	6.5	0.78
Phenanthrene	ND		ug/kg	6.5	0.55
Dibenzo(a,h)anthracene	ND		ug/kg	6.5	0.65
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.5	0.78
Pyrene	ND		ug/kg	6.5	0.45
1-Methylnaphthalene	ND		ug/kg	6.5	1.0
2-Methylnaphthalene	ND		ug/kg	6.5	1.8

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	107		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/24/21 13:11  
Analyst: JJW

Extraction Method: EPA 3546  
Extraction Date: 11/23/21 20:19

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 15-16 Batch: WG1575295-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.86
Fluoranthene	1.8	J	ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	1.2	J	ug/kg	6.6	0.63
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	0.99	J	ug/kg	6.6	0.63
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	0.86	J	ug/kg	6.6	0.50
Acenaphthylene	ND		ug/kg	6.6	0.83
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	0.99	J	ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	1.4	J	ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	88		18-120



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 27 Batch: WG1571434-2 WG1571434-3								
Acenaphthene	80		93		40-140	15		40
2-Chloronaphthalene	83		98		40-140	17		40
Fluoranthene	91		104		40-140	13		40
Naphthalene	78		94		40-140	19		40
Benzo(a)anthracene	82		92		40-140	11		40
Benzo(a)pyrene	89		102		40-140	14		40
Benzo(b)fluoranthene	94		104		40-140	10		40
Benzo(k)fluoranthene	98		116		40-140	17		40
Chrysene	87		100		40-140	14		40
Acenaphthylene	88		105		40-140	18		40
Anthracene	88		101		40-140	14		40
Benzo(ghi)perylene	82		94		40-140	14		40
Fluorene	86		98		40-140	13		40
Phenanthrene	82		94		40-140	14		40
Dibenzo(a,h)anthracene	88		106		40-140	19		40
Indeno(1,2,3-cd)pyrene	91		103		40-140	12		40
Pyrene	90		103		40-140	13		40
1-Methylnaphthalene	80		95		40-140	17		40
2-Methylnaphthalene	88		105		40-140	18		40

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 27 Batch: WG1571434-2 WG1571434-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	89		106		23-120
2-Fluorobiphenyl	85		102		15-120
4-Terphenyl-d14	94		107		41-149

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 Batch: WG1571478-2								
Perfluorobutanoic Acid (PFBA)	99		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	99		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	97		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	108		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	99		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	91		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	110		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	95		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	102		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	101		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	96		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	90		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	108		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	101		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 Batch: WG1571478-2								
Perfluorotridecanoic Acid (PFTrDA)	124		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	106		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	104		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	94		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	20		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2162323

Project Number: 5060.00

Report Date: 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 Batch: WG1571478-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	94				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	68				10-206



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 Batch: WG1571865-2								
Perfluorobutanoic Acid (PFBA)	99		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		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)	96		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	89		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	101		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	105		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	96		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	89		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	101		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	100		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	101		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	88		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	93		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	117		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	91		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	102		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	108		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	102		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 Batch: WG1571865-2								
Perfluorotridecanoic Acid (PFTrDA)	122		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	93		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	106		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	91		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	88		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	23		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2162323

Project Number: 5060.00

Report Date: 12/08/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 Batch: WG1571865-2									

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	95				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	124				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	198	Q			14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	224	Q			20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	271	Q			19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	106				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	76				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	41				10-145

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 Batch: WG1571865-2								
Perfluorooctanesulfonamide (FOSA)	117		-		67-137	-		30

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	117				10-117



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 Batch: WG1572400-2								
Perfluorobutanoic Acid (PFBA)	101		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	100		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	100		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	115		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	104		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	92		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	98		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	106		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	115		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	119		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	103		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	116		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	105		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	86		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	123		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	101		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	105		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	108		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	111		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	110		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 Batch: WG1572400-2								
Perfluorotridecanoic Acid (PFTrDA)	128		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	121		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	88		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	115		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	92		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	43		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2162323

Project Number: 5060.00

Report Date: 12/08/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 Batch: WG1572400-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	36				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	30				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	35				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	109				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	159				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	170	Q			10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 Batch: WG1572400-2									
Perfluorooctanesulfonamide (FOSA)	123		-		67-137		-		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	143	Q			10-117
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	157	Q			10-146
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	180	Q			10-145
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	191	Q			10-146
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	226	Q			10-129



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 17-22 Batch: WG1574236-2 WG1574236-3								
Acenaphthene	77		94		40-140	20		50
2-Chloronaphthalene	77		98		40-140	24		50
Fluoranthene	91		102		40-140	11		50
Naphthalene	69		93		40-140	30		50
Benzo(a)anthracene	91		102		40-140	11		50
Benzo(a)pyrene	93		104		40-140	11		50
Benzo(b)fluoranthene	90		93		40-140	3		50
Benzo(k)fluoranthene	89		112		40-140	23		50
Chrysene	81		90		40-140	11		50
Acenaphthylene	85		106		40-140	22		50
Anthracene	87		99		40-140	13		50
Benzo(ghi)perylene	79		89		40-140	12		50
Fluorene	83		98		40-140	17		50
Phenanthrene	81		94		40-140	15		50
Dibenzo(a,h)anthracene	91		102		40-140	11		50
Indeno(1,2,3-cd)pyrene	84		97		40-140	14		50
Pyrene	88		99		35-142	12		50
1-Methylnaphthalene	71		92		40-140	26		50
2-Methylnaphthalene	69		89		40-140	25		50

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 17-22 Batch: WG1574236-2 WG1574236-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	78		97		23-120
2-Fluorobiphenyl	76		89		30-120
4-Terphenyl-d14	89		91		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-08,10-11,13-14,23-25 Batch: WG1574653-2 WG1574653-3								
Acenaphthene	71		98		40-140	32		50
2-Chloronaphthalene	68		91		40-140	29		50
Fluoranthene	78		108		40-140	32		50
Naphthalene	69		90		40-140	26		50
Benzo(a)anthracene	82		114		40-140	33		50
Benzo(a)pyrene	82		115		40-140	34		50
Benzo(b)fluoranthene	78		111		40-140	35		50
Benzo(k)fluoranthene	77		102		40-140	28		50
Chrysene	69		95		40-140	32		50
Acenaphthylene	74		99		40-140	29		50
Anthracene	76		106		40-140	33		50
Benzo(ghi)perylene	80		116		40-140	37		50
Fluorene	74		100		40-140	30		50
Phenanthrene	71		99		40-140	33		50
Dibenzo(a,h)anthracene	88		126		40-140	36		50
Indeno(1,2,3-cd)pyrene	84		122		40-140	37		50
Pyrene	80		110		35-142	32		50
1-Methylnaphthalene	70		93		40-140	28		50
2-Methylnaphthalene	68		90		40-140	28		50

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-08,10-11,13-14,23-25 Batch: WG1574653-2 WG1574653-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	81		103		23-120
2-Fluorobiphenyl	68		87		30-120
4-Terphenyl-d14	79		103		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 15-16 Batch: WG1575295-2 WG1575295-3								
Acenaphthene	65		82		40-140	23		50
2-Chloronaphthalene	60		78		40-140	26		50
Fluoranthene	71		90		40-140	24		50
Naphthalene	62		78		40-140	23		50
Benzo(a)anthracene	76		97		40-140	24		50
Benzo(a)pyrene	76		98		40-140	25		50
Benzo(b)fluoranthene	72		94		40-140	27		50
Benzo(k)fluoranthene	73		92		40-140	23		50
Chrysene	64		79		40-140	21		50
Acenaphthylene	64		84		40-140	27		50
Anthracene	70		90		40-140	25		50
Benzo(ghi)perylene	76		99		40-140	26		50
Fluorene	66		86		40-140	26		50
Phenanthrene	66		84		40-140	24		50
Dibenzo(a,h)anthracene	82		106		40-140	26		50
Indeno(1,2,3-cd)pyrene	81		104		40-140	25		50
Pyrene	70		91		35-142	26		50
1-Methylnaphthalene	62		79		40-140	24		50
2-Methylnaphthalene	60		77		40-140	25		50

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 15-16 Batch: WG1575295-2 WG1575295-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	70		88		23-120
2-Fluorobiphenyl	56		72		30-120
4-Terphenyl-d14	65		83		18-120



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 QC Batch ID: WG1571478-3 QC Sample: L2161133-01 Client ID:												
MS Sample												
Perfluorooctanoic Acid (PFOA)	12.8	38.9	51.7	100		-	-		63-159	-		30
Perfluorooctanesulfonic Acid (PFOS)	4.52F	36.1	41.3	102		-	-		52-151	-		30

<b>Surrogate</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77				62-129

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-3 QC Sample: L2162323-01 Client ID: LI-03_11092021												
Perfluorobutanoic Acid (PFBA)	0.120J	6.67	6.72	99		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	6.67	6.65	100		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	5.92	5.73	97		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	6.24	6.55	105		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	6.67	6.60	99		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	6.27	5.61	90		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	6.67	6.75	101		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	6.09	6.30	103		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.121JF	6.67	6.67	98		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	6.35	6.73	106		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	6.35	5.69	90		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	6.67	6.83	102		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	6.19	6.34	102		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	6.67	7.77	117		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	6.4	5.14	80		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	6.41	5.61	88		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.67	7.84	118		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	6.67	6.56	98		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	6.43	6.29	98		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	6.67	5.61F	84		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	6.67	9.09	136		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	6.67	6.79	102		-	-		69-135	-		30



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-3 QC Sample: L2162323-01 Client ID: LI-03_11092021												
Perfluorotridecanoic Acid (PFTrDA)	ND	6.67	7.72	116		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	6.67	6.13	92		-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	65	78.7	121		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	6.29	5.79	92		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	6.67	6.07	91		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	6.67	1.14JF	17		-	-		10-123	-		30

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	248	Q			19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	176	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	190	Q			20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	37				34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70	Q			75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	38				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	13				10-145

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-3 QC Sample: L2162323-01  
Client ID: LI-03\_11092021

<b>Surrogate</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	78				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>6</b>	Q			10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85				74-139

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-3 QC Sample: L2162323-22 Client ID: CU-O2_11082021												
Perfluorobutanoic Acid (PFBA)	0.456J	5.99	6.59	102		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	1.58	5.99	7.72	102		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	5.32	5.35	101		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.61	7.11	127		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.656	5.99	6.94	105		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.63	5.51	98		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.210J	5.99	6.38	103		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.48	5.37	98		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.238JF	5.99	6.56	105		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	5.71	5.84	102		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.71	6.29	110		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.181JF	5.99	5.94	96		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	1.23	5.56	7.43	111		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	5.99	6.73	112		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.75	6.61	115		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	5.77	6.73	117		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.99	5.16F	86		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.063JF	5.99	6.33	105		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	5.78	6.47	112		-	-		59-134	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.99	6.85	114		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	5.99	7.04	117		-	-		69-135	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	5.99	8.09	135		-	-		66-139	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2162323

**Project Number:** 5060.00

**Report Date:** 12/08/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-3 QC Sample: L2162323-22 Client ID: CU-02_11082021												
Perfluorotetradecanoic Acid (PFTA)	ND	5.99	8.23	137	Q	-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	58.4	66.7F	114		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	5.66	5.53	98		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	5.99	5.93F	99		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	5.99	3.96	66		-	-		10-123	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	28				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	31				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	28				20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	121				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	33	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	126				10-145
Perfluoro[13C4]Butanoic Acid (MPFBA)	72				61-135

**Matrix Spike Analysis****Batch Quality Control****Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2162323**Project Number:** 5060.00**Report Date:** 12/08/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-3 QC Sample: L2162323-22 Client ID: CU-02_11082021												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS</b>		<b>MSD</b>		<b>Acceptance Criteria</b>
	<b>% Recovery</b>	<b>Qualifier</b>	<b>% Recovery</b>	<b>Qualifier</b>	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65				58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				74-139

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2162323

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 QC Batch ID: WG1571478-4 QC Sample: L2161226-01						
Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	7.26	7.22	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	7.62	7.67	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	6.96	7.47	ng/l	7		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	6.85	6.80	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	1.10J	0.697J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	6.28	6.29	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	7.75	7.41	ng/l	4		30
Perfluorooctanoic Acid (PFOA)	51.1	52.1	ng/l	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	2.17	2.53	ng/l	15		30
Perfluorononanoic Acid (PFNA)	2.22	2.24	ng/l	1		30
Perfluorooctanesulfonic Acid (PFOS)	36.2	36.0	ng/l	1		30
Perfluorodecanoic Acid (PFDA)	0.356J	0.312J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 QC Batch ID: WG1571478-4 QC Sample: L2161226-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.262J	0.236JF	ng/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	68		74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>270</b>	Q	<b>299</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		78		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		82		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>258</b>	Q	<b>291</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>151</b>		<b>193</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		75		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	62		73		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	48		56		48-131

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09,26-28 QC Batch ID: WG1571478-4 QC Sample: L2161226-01						
Client ID: DUP Sample						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39		44		22-136





## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2162323

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-4 QC Sample: L2162323-02 Client ID: LI-04_11092021						
Perfluorobutanoic Acid (PFBA)	0.061J	0.061J	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)	0.047JF	0.062J	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)	0.332	0.336	ng/g	1		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)	0.057J	0.071J	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-4 QC Sample: L2162323-02 Client ID: LI-04_11092021						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		85		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	132		116		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		95		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>215</b>	Q	<b>196</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		81		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		90		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		93		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>239</b>	Q	<b>226</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		95		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		100		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		93		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>377</b>	Q	<b>333</b>	Q	19-175

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2162323

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571865-4 QC Sample: L2162323-02 Client ID: LI-04_11092021						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		77		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		106		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		20		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		88		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		87		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		83		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	121		78		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	51		46		10-145

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2162323

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-4 QC Sample: L2162323-23 Client ID: SA-01_11092021						
Perfluorobutanoic Acid (PFBA)	0.120J	0.127J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.074J	0.081J	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)	0.080J	0.094J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.067J	0.108J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.168J	0.181JF	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)	0.222J	0.207J	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)	ND	ND	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-4 QC Sample: L2162323-23 Client ID: SA-01_11092021						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		74		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	70		65		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		91		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	28		27		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		82		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		82		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		94		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		76		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	24		25		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		74		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	15	Q	15	Q	19-175

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2162323

Report Date: 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 22-25 QC Batch ID: WG1572400-4 QC Sample: L2162323-23 Client ID: SA-01_11092021						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	31		26	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		80		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		35		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		73		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		89		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	162		156		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	89		103		10-145

# **INORGANICS & MISCELLANEOUS**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-01  
**Client ID:** LI-03\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 11:45  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.12		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	3.33		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	3.22		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	65.5		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-02  
**Client ID:** LI-04\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 12:30  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.22		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	1.21		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	1.21		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.1		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-03  
**Client ID:** KN-04\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 13:20  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.311		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	0.264		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	0.288		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.0		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-04  
**Client ID:** KN-02\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 14:10  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.35		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	1.20		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	1.27		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.3		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-05  
**Client ID:** KN-01\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 15:00  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.66		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	2.52		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	2.59		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.2		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-06  
**Client ID:** KN-03\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 08:45  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.75		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	1.30		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	1.53		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.6		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-07  
**Client ID:** WL-01\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 09:45  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.486		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	0.594		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	0.540		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.9		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-08  
**Client ID:** WL-02\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 09:50  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.58		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	4.87		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	4.22		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	59.1		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-10  
**Client ID:** WL-03\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 10:40  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	6.32		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	6.23		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	6.27		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-11  
**Client ID:** PI-01\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 12:50  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	5.82		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	7.07		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	6.45		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	62.4		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-13  
**Client ID:** PI-03\_11102021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 14:50  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.310		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	0.343		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	0.327		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.4		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-14  
**Client ID:** PI-04\_11112021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/11/21 08:30  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.32		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	3.35		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	3.33		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	71.3		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-15  
**Client ID:** SO-04\_11112021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/11/21 10:30  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.89		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	2.15		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	2.02		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-16  
**Client ID:** SO-03\_11112021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/11/21 11:30  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.05		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	1.93		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	1.99		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-17  
**Client ID:** YO-02\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 10:10  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.10		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	2.54		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	2.32		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-18  
**Client ID:** YO-03\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 11:14  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.52		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	2.67		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	2.60		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	64.6		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-19  
**Client ID:** YO-04\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 12:20  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.18		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	2.54		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	2.86		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.0		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-20  
**Client ID:** YO-01\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 13:15  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.090		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	0.123		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	0.107		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.1		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-21  
**Client ID:** CU-03\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 14:10  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.41		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	2.19		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	2.30		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	66.8		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-22  
**Client ID:** CU-02\_11082021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/08/21 15:35  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	4.10		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	3.26		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	3.68		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.6		%	0.100	NA	1	-	11/16/21 13:36	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-23  
**Client ID:** SA-01\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 08:40  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.70		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	1.67		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	1.69		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.6		%	0.100	NA	1	-	11/16/21 13:36	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**SAMPLE RESULTS**

**Lab ID:** L2162323-24  
**Client ID:** SA-03\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 09:15  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.980		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	0.985		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	0.982		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.3		%	0.100	NA	1	-	11/16/21 13:36	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

### SAMPLE RESULTS

**Lab ID:** L2162323-25  
**Client ID:** LI-01\_11092021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 10:35  
**Date Received:** 11/12/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.88		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	2.03		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	1.95		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.5		%	0.100	NA	1	-	11/16/21 13:36	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab for sample(s): 01-08,10-11,13-21 Batch: WG1571883-2</b>										
Solids, Total	99.9		%	0.100	NA	1	-	11/16/21 09:49	121,2540G	RI
<b>General Chemistry - Westborough Lab for sample(s): 22-25 Batch: WG1572052-2</b>										
Solids, Total	99.9		%	0.100	NA	1	-	11/16/21 13:36	121,2540G	RI
<b>Total Organic Carbon - Mansfield Lab for sample(s): 01-08,10-11,13-18 Batch: WG1575747-1</b>										
Total Organic Carbon (Rep1)	ND		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Rep2)	ND		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
Total Organic Carbon (Average)	ND		%	0.050	0.050	1	-	11/24/21 09:18	13,-	SP
<b>Total Organic Carbon - Mansfield Lab for sample(s): 19-25 Batch: WG1576139-1</b>										
Total Organic Carbon (Rep1)	ND		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Rep2)	ND		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP
Total Organic Carbon (Average)	ND		%	0.050	0.050	1	-	11/24/21 09:17	13,-	SP

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-08,10-11,13-18 Batch: WG1575747-2								
Total Organic Carbon (Rep1)	107		-		75-125	-		25
Total Organic Carbon (Rep2)	100		-		75-125	-		25
Total Organic Carbon (Average)	104		-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 19-25 Batch: WG1576139-2								
Total Organic Carbon (Rep1)	110		-		75-125	-		25
Total Organic Carbon (Rep2)	102		-		75-125	-		25
Total Organic Carbon (Average)	106		-		75-125	-		25



**Matrix Spike Analysis**  
Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2162323

Project Number: 5060.00

Report Date: 12/08/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-08,10-11,13-18 QC Batch ID: WG1575747-4 QC Sample: L2162323-14 Client ID: PI-04_11112021												
Total Organic Carbon (Rep1)	3.32	0.769	5.01	220	Q	-	-		75-125	-		25
Total Organic Carbon (Rep2)	3.35	0.796	4.49	143	Q	-	-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 19-25 QC Batch ID: WG1576139-4 QC Sample: L2162323-25 Client ID: LI-01_11092021												
Total Organic Carbon (Rep1)	1.88	1.04	2.94	102		-	-		75-125	-		25
Total Organic Carbon (Rep2)	2.03	1.06	3.38	127	Q	-	-		75-125	-		25

## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2162323

**Report Date:** 12/08/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08,10-11,13-21 QC Batch ID: WG1571883-1 QC Sample: L2162323-01 Client ID: LI-03_11092021						
Solids, Total	65.5	64.0	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 22-25 QC Batch ID: WG1572052-1 QC Sample: L2161360-01 Client ID: DUP Sample						
Solids, Total	88.4	87.7	%	1		20
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-08,10-11,13-18 QC Batch ID: WG1575747-3 QC Sample: L2162323-14 Client ID: PI-04_11112021						
Total Organic Carbon (Rep1)	3.32	3.61	%	8		25
Total Organic Carbon (Rep2)	3.35	3.53	%	5		25
Total Organic Carbon (Average)	3.33	3.57	%	7		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 19-25 QC Batch ID: WG1576139-3 QC Sample: L2162323-25 Client ID: LI-01_11092021						
Total Organic Carbon (Rep1)	1.88	2.36	%	23		25
Total Organic Carbon (Rep2)	2.03	2.16	%	6		25
Total Organic Carbon (Average)	1.95	2.26	%	15		25

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2162323**Project Number:** 5060.00**Report Date:** 12/08/21**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

Cooler	Custody Seal
A	Absent
B	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2162323-01A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-01B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-01C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-01D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-02A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-02B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-02C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-02D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-03A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-03B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-03C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-03D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-04A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-04B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-04C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-04D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-05A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-05B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-05C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-05D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-06A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-06B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2162323**Project Number:** 5060.00**Report Date:** 12/08/21**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2162323-06C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-06D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-07A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-07B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-07C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-07D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-08A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-08B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-08C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-08D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-09A	Plastic 250ml unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-10A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-10B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-10C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-10D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-11A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-11B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-11C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-11D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-12A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ARCHIVE()
L2162323-12B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		ARCHIVE()
L2162323-12C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		ARCHIVE()
L2162323-12D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		ARCHIVE()
L2162323-13A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-13B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-13C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-13D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-14A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

Serial\_No:12082116:40

**Lab Number:** L2162323

**Report Date:** 12/08/21

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2162323-14B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-14C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-14D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-15A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-15B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-15C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-15D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-16A	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		ME-TS-2540(7)
L2162323-16B	Plastic 8oz unpreserved	A	NA		5.4	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-16C	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		PAHTCL-SIM(14)
L2162323-16D	Glass 60ml unpreserved split	A	NA		5.4	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-17A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-17B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-17C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-17D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-18A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-18B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-18C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-18D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-19A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-19B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-19C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-19D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-20A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-20B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-20C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-20D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-21A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2162323**Project Number:** 5060.00**Report Date:** 12/08/21**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2162323-21B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-21C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-21D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-22A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-22B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-22C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-22D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-23A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-23B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-23C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-23D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-24A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-24B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-24C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-24D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-25A	Plastic 2oz unpreserved for TS	B	NA		2.6	Y	Absent		ME-TS-2540(7)
L2162323-25B	Plastic 8oz unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-25C	Glass 250ml/8oz unpreserved	B	NA		2.6	Y	Absent		PAHTCL-SIM(14)
L2162323-25D	Glass 60ml unpreserved split	B	NA		2.6	Y	Absent		A2-TOC-LK-2REPS(14)
L2162323-26A	Plastic 250ml unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-27A	Plastic 250ml unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-27B	Plastic 250ml unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-27C	Amber 250ml unpreserved	B	7	7	2.6	Y	Absent		PAHTCL-SIM-LVI(7)
L2162323-27D	Amber 250ml unpreserved	B	7	7	2.6	Y	Absent		PAHTCL-SIM-LVI(7)
L2162323-28A	Plastic 250ml unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2162323-28B	Plastic 250ml unpreserved	B	NA		2.6	Y	Absent		A2-ME-537ISOTOPE-28+(14)

**PFAS PARAMETER SUMMARY**

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

## 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

#### 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

**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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2162323  
**Report Date:** 12/08/21

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 13 Determination of Total Organic Carbon in Sediment. U.S. EPA, Region II. July 27, 1988.
- 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.



## 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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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, **LCHAT 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.



# CHAIN OF CUSTODY

PAGE 1 OF 4

### Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA TEL 508-898-9220 FAX 508-898-9192  
 Mansfield, MA TEL 508-822-4300 FAX 508-822-3298

### Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice to the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab:	ALPHA Job #: REM02
<b>Report Information</b>	<b>Data Deliverables</b>
<input type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL
<input checked="" type="checkbox"/> ADEx	<input checked="" type="checkbox"/> Add'l Deliverables
<b>Billing Information</b>	
<input type="checkbox"/> Same as Client Info	PO #: REM02

**Regulatory Requirements/Report Limits**

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

ANALYSIS		SAMPLE HANDLING		TOTAL # REFERENCE
PFAS: 537 Isotope Division - 28 List	PAHs: Method 8270 - 19 compounds	<input type="checkbox"/> Done	<input type="checkbox"/> Not Requested	
TOC: Lloyd Kalhn	Percent Solids	<input type="checkbox"/> Lab to do Preservation	<input type="checkbox"/> Lab to do (Please specify below)	
SVOC: Quantik				

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials																
		Date	Time																		
	LE-03-11092021	11/09	1145	S	DLR	<input checked="" type="checkbox"/>															
	LE-04-11092021	11/09	1230	S	DLR	<input checked="" type="checkbox"/>															
	KN-01-11092021	11/09	1320	S	DLR	<input checked="" type="checkbox"/>															
	KN-02-11092021	11/09	1410	S	DLR	<input checked="" type="checkbox"/>															
	KN-01-11092021	11/09	1500	S	DLR	<input checked="" type="checkbox"/>															
	KN-03-11102021	11/10	0845	S	DLR	<input checked="" type="checkbox"/>															
	WL-01-11102021	11/10	0945	S	DLR	<input checked="" type="checkbox"/>															
	WL-02-11102021	11/10	0950	S	DLR	<input checked="" type="checkbox"/>															
	TB-1-11032021	11/03	1610	S	DYL	<input checked="" type="checkbox"/>															

Container Type	P	g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: <u>Dan Palko</u>	Date/Time: <u>11/12/21 0855</u>	Received By: <u>[Signature]</u>	Date/Time: <u>11/21/21 955</u>
-----------------------------------	---------------------------------	---------------------------------	--------------------------------

Courier: \_\_\_\_\_ SC: NH

Client: SHA-NH

#of Coolers 1 of 2

NH842531

Courier: \_\_\_\_\_ SC: NH

Client: SHA-NH

#of Coolers 2 of 2

NH842532

L2162323

# CHAIN OF CUSTODY

PAGE 1 OF 1



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM  
Address: 20 Foundry Street  
Concord, NH 03301  
Phone: 603-229-1900  
Fax: 603-229-1919  
Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 11/12/21

ALPHA Job #: REM02-216214

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO# REM02

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

	PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	Trip Blank													
62114-01	LI-03-11092021	11/09 1145	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62323-02	LI-04-11092021	11/09 1230	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	KN-04-11092021	11/09 1320	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	KN-02-11092021	11/09 1410	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05	KN-01-11092021	11/09 1500	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06	KN-03-11102021	11/10 0845	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07	WL-01-11102021	11/10 0945	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08	WL-02-11102021	11/10 0950	S	DLR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
09	TB-1-11032021	11/03 1610	<del>S</del> L	DYL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
62114-01	LI-03-11092021	11/09	1145	S	DLR
62323-02	LI-04-11092021	11/09	1230	S	DLR
03	KN-04-11092021	11/09	1320	S	DLR
04	KN-02-11092021	11/09	1410	S	DLR
05	KN-01-11092021	11/09	1500	S	DLR
06	KN-03-11102021	11/10	0845	S	DLR
07	WL-01-11102021	11/10	0945	S	DLR
08	WL-02-11102021	11/10	0950	S	DLR
09	TB-1-11032021	11/03	1610	<del>S</del> L	DYL

Container Type	P	g	-	-	-	-	-	-	-	-	-	-	-
Preservative	0	0	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Don Pacc</i>	11/12 0855	<i>Don Pacc</i>	11/12/21 855
<i>Chad AAL</i>	11/12/21	<i>Chad AAL</i>	11/12/21 1700
<i>John AAL</i>	11/12/21 2030	<i>John AAL</i>	11/12/21

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 4

## Project Information

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3268

Project Name: Maine Background Soils Study

## Client Information

Client: Sanborn, Head & Associates for SOM

Project Location: Various, Maine

Address: 20 Foundry Street

Project #: 5060.00

Concord, NH 03301

Project Manager: H. Roakes/ Troy Smith Maine

Phone: 603-229-1900

ALPHA Quote #: Maine DEP REM02

Fax: 603-229-1919

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab:

ALPHA Job #: REM02

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids															
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
	WL-03-11102021	11/10	1040	S	DLR
	PI-01-11102021	11/10	1250	S	DLR
	PI-02-11102021	11/10	1330	S	DLR
	PI-03-11102021	11/10	1450	S	DLR
	PI-04-11112021	11/11	0830	S	DLR
	SO-04-11112021	11/11	1030	S	DLR
	SO-03-11112021	11/11	1130	S	DLR

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: Dan Pelz    Date/Time: 11/12/2021 0855  
 Received By: [Signature]    Date/Time: 11/12/21 9:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples admitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 1 OF 1



## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab: 11/12/21

ALPHA Job #: REM02L262323

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids																
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
62323-10	WL-03-11102021	11/10	1040	S	DLR
11	PI-01-11102021	11/10	1250	S	DLR
12	PI-02-11102021	11/10	1330	S	DLR
13	PI-03-11102021	11/10	1450	S	DLR
14	PI-04-11112021	11/11	0830	S	DLR
15	SO-04-11112021	11/11	1030	S	DLR
16	SO-03-11112021	11/11	1130	S	DLR

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: Don Roberts Date/Time: 11/12/21 0855  
 Received By: Don Roberts Date/Time: 11/12/21 1700  
Estelle AAL 11/12/21 7:03

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2/1





# CHAIN OF CUSTODY

PAGE 3 OF 4

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

### Client Information

Client: Sanborn, Head & Associates for SOM  
 Address: 20 Foundry Street  
 Concord, NH 03301  
 Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

### Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab:

ALPHA Job #: REM02

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client Info PO #: REM02

### Regulatory Requirements/Report Limits

State/Fed Program Criteria

### ANALYSIS

	PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	TC-P Blank													
Y-02-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y-03-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y-04-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y-01-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W-03-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W-02-11082021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SA-01-11092021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SA-03-11092021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LE-01-11092021	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TB-2-11032021	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### SAMPLE HANDLING

Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)

Sample ID

Collection

Date Time

Sample Matrix

Sampler's Initials

Y-02-11082021  
 Y-03-11082021  
 Y-04-11082021  
 Y-01-11082021  
 W-03-11082021  
 W-02-11082021  
 SA-01-11092021  
 SA-03-11092021  
 LE-01-11092021  
 TB-2-11032021

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-
Relinquished By:	Date/Time	Received By:	Date/Time												
<i>Dan Poff</i>	11/12 0855	<i>[Signature]</i>	11/12/21 9												

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# CHAIN OF CUSTODY

PAGE 1 OF 1



## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab: 11/12/21

ALPHA Job #: REM02 62162323

## Report Information Data Deliverables

FAX  EMAIL  
 ADEK  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	TRIP Blank														
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
62323-17	Y02-11082021	11/08	1010	S	DLR
18	Y03-11082021	11/08	1114	S	DLR
19	Y04-11082021	11/08	1220	S	DLR
20	Y01-11082021	11/08	1315	S	DLR
21	W-03-11082021	11/08	1410	S	DLR
22	W-02-11082021	11/08	1535	S	DLR
23	SA-01-11092021	11/09	0840	S	DLR
24	SA-03-11092021	11/09	0915	S	DLR
25	LC-01-11092021	11/09	1035	S	DLR
26	TR-2-11032021	11/03	1610	L	DYL

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Dan Poff</i>	11/12 0855	<i>[Signature]</i>	11/12/21 9:55
<i>[Signature]</i>	11/12/21 1700	<i>[Signature]</i>	11/12/21 1700
<i>[Signature]</i>	11/12/21 2030	<i>[Signature]</i>	11/12/21 2030

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 4 OF 4

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

### Client Information

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 Address: 20 Foundry Street  
 Concord, NH 03301  
 Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

### Project Information

Project Name: Maine Background Soils Study  
 Project Location: Various, Maine  
 Project #: 5060.00  
 Project Manager: H. Roakes/ Troy Smith Maine  
 ALPHA Quote #: Maine DEP REM02

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab:

ALPHA Job #: REM02

### Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

### Billing Information

Same as Client info    PO #: REM02

### Regulatory Requirements/Report Limits

State/Fed Program    Criteria

### ANALYSIS

PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	Field Blank	Equipment Blank											
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
	EB-01 - <del>20211115</del> 20211115	11/10	1239	AQ	DLR
	FB-01 - <del>20211115</del> 20211115	11/10	1246	AQ	DLR

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *Dan Pella*    Date/Time: 11/12 0855  
 Received By: *[Signature]*    Date/Time: 11/12/21 9:55

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab 11/12/21 ALPHA Job #: REM02 L2162323

Report Information	Data Deliverables	Billing Information
<input type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL	<input type="checkbox"/> Same as Client info
<input checked="" type="checkbox"/> ADEx	<input checked="" type="checkbox"/> Add'l Deliverables	PO# <u>REM02</u>

**Regulatory Requirements/Report Limits**

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

**Project Information**

Project Name: Maine Background Soils Study

## Client Information

Client: Sanborn, Head & Associates for SOM  
 Address: 20 Foundry Street  
 Concord, NH 03301  
 Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

These samples have been Previously analyzed by Alpha Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Other Project Specific Requirements/Comments/Detection Limits:  
 Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<u>62323-27</u>	<u>EB-01 - <del>11/11/21</del> 20211115</u>	<u>11/10</u>	<u>1238</u>	<u>AE AQ</u>	<u>DLR</u>
<u>28</u>	<u>FB-01 - <del>11/11/21</del> 20211115</u>	<u>11/10</u>	<u>1246</u>	<u>AE AQ</u>	<u>DLR</u>

## ANALYSIS

PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	Field Blank	Equipment Blank												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**SAMPLE HANDLING**

Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Dan Rella</u>	<u>11/12 0955</u>	<u>[Signature]</u>	<u>11/12/21 1700</u>
<u>[Signature]</u>	<u>11/12/21</u>	<u>[Signature]</u>	<u>11/12/21 1700</u>
<u>[Signature]</u>	<u>11/12/21 2030</u>	<u>[Signature]</u>	<u>11/12/21 1700</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

[Signature]  
212

**Alpha Analytical Laboratories, Inc.**  
**L2164267**



## ANALYTICAL REPORT

Lab Number:	L2164267
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	01/03/22

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-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2164267-01	CU-01_20211115	SOIL	VARIOUS, MAINE	11/15/21 11:55	11/19/21
L2164267-02	CU-04_20211115	SOIL	VARIOUS, MAINE	11/15/21 13:20	11/19/21
L2164267-03	OX-02_20211115	SOIL	VARIOUS, MAINE	11/15/21 15:00	11/19/21
L2164267-04	OX-02_20211115 DUP	SOIL	VARIOUS, MAINE	11/15/21 15:00	11/19/21
L2164267-05	OX-01_20211115	SOIL	VARIOUS, MAINE	11/15/21 16:00	11/19/21
L2164267-06	OX-04_20211116	SOIL	VARIOUS, MAINE	11/16/21 09:15	11/19/21
L2164267-07	OX-03_20211116	SOIL	VARIOUS, MAINE	11/16/21 10:20	11/19/21
L2164267-08	FR-03_20211116	SOIL	VARIOUS, MAINE	11/16/21 11:50	11/19/21
L2164267-09	FR-04_20211116	SOIL	VARIOUS, MAINE	11/16/21 12:55	11/19/21
L2164267-10	FR-04_20211116-DUP	SOIL	VARIOUS, MAINE	11/16/21 12:55	11/19/21
L2164267-11	FR-02_20211116	SOIL	VARIOUS, MAINE	11/16/21 14:25	11/19/21
L2164267-12	FR-01_20211116	SOIL	VARIOUS, MAINE	11/16/21 15:10	11/19/21
L2164267-13	WL-04_20211117	SOIL	VARIOUS, MAINE	11/17/21 08:00	11/19/21
L2164267-14	KE-04_20211117	SOIL	VARIOUS, MAINE	11/17/21 09:10	11/19/21
L2164267-15	KE-02_20211117	SOIL	VARIOUS, MAINE	11/17/21 10:05	11/19/21
L2164267-16	KE-01_20211117	SOIL	VARIOUS, MAINE	11/17/21 11:20	11/19/21
L2164267-17	KE-03_20211117	SOIL	VARIOUS, MAINE	11/17/21 12:05	11/19/21
L2164267-18	SA-04_20211117	SOIL	VARIOUS, MAINE	11/17/21 13:15	11/19/21
L2164267-19	LI-02_20211117	SOIL	VARIOUS, MAINE	11/17/21 15:00	11/19/21
L2164267-20	SA-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 08:15	11/19/21
L2164267-21	AN-04_20211118	SOIL	VARIOUS, MAINE	11/18/21 09:30	11/19/21
L2164267-22	AN-03_20211118	SOIL	VARIOUS, MAINE	11/18/21 10:35	11/19/21
L2164267-23	AN-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 11:45	11/19/21
L2164267-24	AN-02_20211118_DUP	SOIL	VARIOUS, MAINE	11/18/21 11:45	11/19/21

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2164267-25	AN-01_20211118	SOIL	VARIOUS, MAINE	11/18/21 13:15	11/19/21
L2164267-26	SO-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 15:20	11/19/21
L2164267-27	SO-01_20211119	SOIL	VARIOUS, MAINE	11/19/21 08:30	11/19/21
L2164267-28	PI-02_20211119	SOIL	VARIOUS, MAINE	11/19/21 10:05	11/19/21
L2164267-29	EB-02_20211117	WATER	VARIOUS, MAINE	11/17/21 12:30	11/19/21
L2164267-30	EB-03_20211119	WATER	VARIOUS, MAINE	11/19/21 10:20	11/19/21
L2164267-31	FB-02_20211117	WATER	VARIOUS, MAINE	11/17/21 15:30	11/19/21
L2164267-32	FB-03_20211118	WATER	VARIOUS, MAINE	11/18/21 15:40	11/19/21
L2164267-33	TB-01_20211109	WATER	VARIOUS, MAINE	11/09/21 13:06	11/19/21
L2164267-34	TB-02_20211109	WATER	VARIOUS, MAINE	11/09/21 13:06	11/19/21



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### 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.

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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### Case Narrative (continued)

#### Report Revision

January 03, 2022: The Client IDs were amended on -13, -20, -26, -27, -29.

December 15, 2021: This final report includes the results of all requested analyses.

December 13, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### PAHs by SIM

L2164267-02D, -12D, and -24D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2164267-09D and -10D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2164267-09D and -10D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%), and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

L2164267-15, -21, and -22: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

The WG1576793-3 LCSD recovery, associated with L2164267-20, -21, and -22, is above the individual acceptance criteria for 2-methylnaphthalene (156%), but within the overall method allowances. The results of the associated samples are reported. The LCS/LCSD RPD is above the acceptance criteria for 2-methylnaphthalene (55%).

#### Perfluorinated Alkyl Acids by Isotope Dilution

L2164267-01, -04, -05, -07, -09, -10, -11, -14, -18, -21, -22, -23, -23RE, -24 through -34, WG1575152-1, WG1576515-1, WG1576595-1, WG1575152-2, WG1576595-2, WG1574858-3, WG1575152-3, and

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### Case Narrative (continued)

WG1575152-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2164267-01 through -34, WG1574858-3, and WG1574858-4: Sample results for Perfluorohexanesulfonic Acid (PFHxS), Perfluorooctanoic Acid (PFOA), Perfluorooctanesulfonic Acid (PFOS), N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA), and N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA) are reported as the sum of the branched and linear isomers.

L2164267-05: The Extracted Internal Standard recoveries are less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (3%) and n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (4%); however, re-extraction with the method required holding time exceeded achieved similar results. The results of original extraction are reported; however, all associated compounds are considered to have a potential bias.

L2164267-11: The Extracted Internal Standard recovery is less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (8%); however, re-extraction with the method required holding time exceeded achieved similar results. The results of original extraction are reported; however, all associated compounds are considered to have a potential bias.

L2164267-23: The MeOH fraction of the extraction is reported for perfluorooctanesulfonamide (fosa) due to better extraction efficiency of the perfluoro[13c8]octanesulfonamide (m8fosa) Extracted Internal Standard.

L2164267-23: The Extracted Internal Standard recoveries are less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (2%) and n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (2%); however, re-extraction on dilution achieved similar results. The results of the re-extraction are reported for the associated target compounds.

L2164267-24: The Extracted Internal Standard recoveries are less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (4%) and n-deuterioethylperfluoro-1-octanesulfonamidoacetic acid (d5-netfosaa) (2%); however, re-extraction on dilution achieved similar results. The results of the re-extraction are reported for the associated target compounds.

L2164267-27: The Extracted Internal Standard recoveries are less than 10% for n-deuteriomethylperfluoro-1-octanesulfonamidoacetic acid (d3-nmefosaa) (1%) and n-deuterioethylperfluoro-1-octanesulfonamidoacetic

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### Case Narrative (continued)

acid (d5-netfosaa) (4%); however, re-extraction on dilution achieved similar results. The results of the re-extraction are reported for the associated target compounds.

The WG1575152-3 MS recovery, performed on L2164267-21, is outside the acceptance criteria for n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (173%).

#### Total Organic Carbon

The WG1576674-4 MS recovery for total organic carbon (rep2) (61%), performed on L2164267-06, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria, indicating the sample batch was in control, and all sample results were accepted.

The WG1577222-4 MS recovery for total organic carbon (rep1) (44%), performed on L2164267-28, is outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria, indicating the sample batch was in control, and all sample results were accepted.

The WG1576674-3 Laboratory Duplicate RPD for total organic carbon (rep2) (34%), performed on L2164267-06, is outside the acceptance criteria of 25%. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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:

*Michael Chang* Michael Chang

Title: Technical Director/Representative

Date: 01/03/22

# ORGANICS

# SEMIVOLATILES

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-01  
 Client ID: CU-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 11:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 13:23  
 Analyst: DV  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.1	1.5	1
2-Chloronaphthalene	ND		ug/kg	7.1	0.92	1
Fluoranthene	1.5	J	ug/kg	7.1	0.50	1
Naphthalene	ND		ug/kg	7.1	1.3	1
Benzo(a)anthracene	1.3	J	ug/kg	7.1	0.67	1
Benzo(a)pyrene	0.92	J	ug/kg	7.1	0.85	1
Benzo(b)fluoranthene	1.3	J	ug/kg	7.1	0.67	1
Benzo(k)fluoranthene	ND		ug/kg	7.1	0.64	1
Chrysene	0.88	J	ug/kg	7.1	0.53	1
Acenaphthylene	ND		ug/kg	7.1	0.88	1
Anthracene	ND		ug/kg	7.1	0.57	1
Benzo(ghi)perylene	0.85	J	ug/kg	7.1	0.60	1
Fluorene	ND		ug/kg	7.1	0.85	1
Phenanthrene	0.78	J	ug/kg	7.1	0.60	1
Dibenzo(a,h)anthracene	ND		ug/kg	7.1	0.71	1
Indeno(1,2,3-cd)pyrene	0.92	J	ug/kg	7.1	0.85	1
Pyrene	1.5	J	ug/kg	7.1	0.50	1
1-Methylnaphthalene	ND		ug/kg	7.1	1.1	1
2-Methylnaphthalene	ND		ug/kg	7.1	2.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-01  
**Client ID:** CU-01\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 11:55  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 12/11/21 13:16  
**Analyst:** MP  
**Percent Solids:** 92%

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.504	0.023	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.504	0.046	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.252	0.039	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.01	0.065	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.504	0.053	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.01	0.084	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.252	0.045	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.252	0.061	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.252	0.042	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.504	0.181	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.504	0.138	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.252	0.076	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.252	0.131	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.252	0.068	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.504	0.289	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.01	0.301	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.504	0.203	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.504	0.047	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.504	0.154	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.504	0.099	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.504	0.085	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.504	0.071	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.504	0.206	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.504	0.054	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.1	3.84	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.01	0.042	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.52	0.121	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-01  
 Client ID: CU-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 11:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.52	0.172	1
PFAS, Total (6)	ND		ng/g	0.252	0.042	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	52		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	20	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	30	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	118		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	85		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-02  
 Client ID: CU-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 13:49  
 Analyst: MP  
 Percent Solids: 89%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.029	J	ng/g	0.534	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.534	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.267	0.042	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.07	0.069	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.534	0.056	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.07	0.089	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.267	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.267	0.065	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.267	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.534	0.192	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.534	0.146	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.267	0.080	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.267	0.139	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.267	0.072	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.534	0.306	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.07	0.319	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.534	0.215	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.534	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.534	0.163	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.534	0.105	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.534	0.090	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.534	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.534	0.218	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.534	0.058	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.7	4.07	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.07	0.044	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.67	0.128	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-02  
 Client ID: CU-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.67	0.183	1
PFAS, Total (6)	ND		ng/g	0.267	0.045	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	114		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	88		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-02 D  
 Client ID: CU-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 14:41  
 Analyst: DV  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	38		ug/kg	37	7.7	5
2-Chloronaphthalene	ND		ug/kg	37	4.8	5
Fluoranthene	1800		ug/kg	37	2.6	5
Naphthalene	19	J	ug/kg	37	6.6	5
Benzo(a)anthracene	1400		ug/kg	37	3.5	5
Benzo(a)pyrene	780		ug/kg	37	4.4	5
Benzo(b)fluoranthene	1100		ug/kg	37	3.5	5
Benzo(k)fluoranthene	360		ug/kg	37	3.3	5
Chrysene	830		ug/kg	37	2.7	5
Acenaphthylene	410		ug/kg	37	4.6	5
Anthracene	250		ug/kg	37	2.9	5
Benzo(ghi)perylene	520		ug/kg	37	3.1	5
Fluorene	68		ug/kg	37	4.4	5
Phenanthrene	790		ug/kg	37	3.1	5
Dibenzo(a,h)anthracene	150		ug/kg	37	3.7	5
Indeno(1,2,3-cd)pyrene	620		ug/kg	37	4.4	5
Pyrene	1600		ug/kg	37	2.6	5
1-Methylnaphthalene	7.5	J	ug/kg	37	5.7	5
2-Methylnaphthalene	ND		ug/kg	37	10.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-03  
 Client ID: OX-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 14:46  
 Analyst: DV  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.2	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.2	1.1	1
Fluoranthene	32		ug/kg	8.2	0.58	1
Naphthalene	2.2	J	ug/kg	8.2	1.5	1
Benzo(a)anthracene	23		ug/kg	8.2	0.78	1
Benzo(a)pyrene	17		ug/kg	8.2	0.99	1
Benzo(b)fluoranthene	25		ug/kg	8.2	0.78	1
Benzo(k)fluoranthene	8.6		ug/kg	8.2	0.74	1
Chrysene	17		ug/kg	8.2	0.62	1
Acenaphthylene	6.8	J	ug/kg	8.2	1.0	1
Anthracene	4.0	J	ug/kg	8.2	0.66	1
Benzo(ghi)perylene	14		ug/kg	8.2	0.70	1
Fluorene	1.4	J	ug/kg	8.2	0.99	1
Phenanthrene	16		ug/kg	8.2	0.70	1
Dibenzo(a,h)anthracene	3.5	J	ug/kg	8.2	0.82	1
Indeno(1,2,3-cd)pyrene	16		ug/kg	8.2	0.99	1
Pyrene	30		ug/kg	8.2	0.58	1
1-Methylnaphthalene	ND		ug/kg	8.2	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.2	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-03  
 Client ID: OX-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 14:22  
 Analyst: MP  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.046	J	ng/g	0.613	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.613	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.306	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.079	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.613	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.306	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.306	0.074	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.306	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.613	0.220	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.613	0.167	1
Perfluorononanoic Acid (PFNA)	0.106	J	ng/g	0.306	0.092	1
Perfluorooctanesulfonic Acid (PFOS)	0.216	J	ng/g	0.306	0.159	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.306	0.082	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.613	0.352	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.366	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.613	0.247	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.613	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.613	0.188	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.613	0.120	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.613	0.104	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.613	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.613	0.251	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.613	0.066	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.2	4.67	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.22	0.051	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.06	0.147	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-03  
 Client ID: OX-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.06	0.210	1
PFAS, Total (6)	0.322	J	ng/g	0.306	0.051	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	32		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	116		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	83		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-04  
 Client ID: OX-02\_20211115 DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 14:13  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.0	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.0	1.0	1
Fluoranthene	29		ug/kg	8.0	0.56	1
Naphthalene	2.4	J	ug/kg	8.0	1.4	1
Benzo(a)anthracene	22		ug/kg	8.0	0.76	1
Benzo(a)pyrene	16		ug/kg	8.0	0.96	1
Benzo(b)fluoranthene	25		ug/kg	8.0	0.76	1
Benzo(k)fluoranthene	7.2	J	ug/kg	8.0	0.72	1
Chrysene	17		ug/kg	8.0	0.60	1
Acenaphthylene	7.6	J	ug/kg	8.0	1.0	1
Anthracene	3.4	J	ug/kg	8.0	0.64	1
Benzo(ghi)perylene	14		ug/kg	8.0	0.68	1
Fluorene	1.7	J	ug/kg	8.0	0.96	1
Phenanthrene	14		ug/kg	8.0	0.68	1
Dibenzo(a,h)anthracene	3.0	J	ug/kg	8.0	0.80	1
Indeno(1,2,3-cd)pyrene	15		ug/kg	8.0	0.96	1
Pyrene	29		ug/kg	8.0	0.56	1
1-Methylnaphthalene	1.3	J	ug/kg	8.0	1.2	1
2-Methylnaphthalene	ND		ug/kg	8.0	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	57		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-04  
 Client ID: OX-02\_20211115 DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 14:38  
 Analyst: MP  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.039	J	ng/g	0.578	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.578	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.289	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.16	0.075	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.578	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.16	0.096	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.289	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.289	0.070	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.289	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.578	0.207	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.578	0.158	1
Perfluorononanoic Acid (PFNA)	0.105	J	ng/g	0.289	0.087	1
Perfluorooctanesulfonic Acid (PFOS)	0.156	J	ng/g	0.289	0.150	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.289	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.578	0.332	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.16	0.345	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.578	0.233	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.578	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.578	0.177	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.578	0.113	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.578	0.098	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.578	0.081	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.578	0.236	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.578	0.062	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.6	4.40	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.16	0.048	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.89	0.139	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-04  
 Client ID: OX-02\_20211115 DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.89	0.198	1
PFAS, Total (6)	0.261	J	ng/g	0.289	0.048	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		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)	80		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	87		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-05  
 Client ID: OX-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 14:29  
 Analyst: DV  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	3.7	J	ug/kg	7.8	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.8	1.0	1
Fluoranthene	130		ug/kg	7.8	0.55	1
Naphthalene	13		ug/kg	7.8	1.4	1
Benzo(a)anthracene	110		ug/kg	7.8	0.74	1
Benzo(a)pyrene	66		ug/kg	7.8	0.94	1
Benzo(b)fluoranthene	92		ug/kg	7.8	0.74	1
Benzo(k)fluoranthene	29		ug/kg	7.8	0.70	1
Chrysene	75		ug/kg	7.8	0.59	1
Acenaphthylene	37		ug/kg	7.8	0.98	1
Anthracene	17		ug/kg	7.8	0.62	1
Benzo(ghi)perylene	50		ug/kg	7.8	0.66	1
Fluorene	8.3		ug/kg	7.8	0.94	1
Phenanthrene	88		ug/kg	7.8	0.66	1
Dibenzo(a,h)anthracene	12		ug/kg	7.8	0.78	1
Indeno(1,2,3-cd)pyrene	55		ug/kg	7.8	0.94	1
Pyrene	140		ug/kg	7.8	0.55	1
1-Methylnaphthalene	5.9	J	ug/kg	7.8	1.2	1
2-Methylnaphthalene	9.3		ug/kg	7.8	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-05  
 Client ID: OX-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 14:55  
 Analyst: MP  
 Percent Solids: 85%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.546	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.546	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.273	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.09	0.070	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.546	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.09	0.091	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.273	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.273	0.066	1
Perfluorooctanoic Acid (PFOA)	0.248	J	ng/g	0.273	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.546	0.196	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.546	0.149	1
Perfluorononanoic Acid (PFNA)	0.108	J	ng/g	0.273	0.082	1
Perfluorooctanesulfonic Acid (PFOS)	0.275		ng/g	0.273	0.142	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.273	0.073	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.546	0.313	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.09	0.326	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.546	0.220	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.546	0.051	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.546	0.167	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.546	0.107	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.546	0.092	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.546	0.076	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.546	0.223	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.546	0.059	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.9	4.16	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.09	0.045	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.73	0.131	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-05  
 Client ID: OX-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.73	0.187	1
PFAS, Total (6)	0.631	J	ng/g	0.273	0.046	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	24	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	26	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	30	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	17		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	23	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	23	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	33	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	25	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	23		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	28	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	34	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	28	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	32		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)	31	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	4	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	27	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	30		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	39		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	26		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-06  
 Client ID: OX-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 09:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:04  
 Analyst: DV  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.5	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.5	0.98	1
Fluoranthene	26		ug/kg	7.5	0.53	1
Naphthalene	3.2	J	ug/kg	7.5	1.4	1
Benzo(a)anthracene	41		ug/kg	7.5	0.72	1
Benzo(a)pyrene	18		ug/kg	7.5	0.90	1
Benzo(b)fluoranthene	20		ug/kg	7.5	0.72	1
Benzo(k)fluoranthene	6.2	J	ug/kg	7.5	0.68	1
Chrysene	18		ug/kg	7.5	0.57	1
Acenaphthylene	13		ug/kg	7.5	0.94	1
Anthracene	7.2	J	ug/kg	7.5	0.60	1
Benzo(ghi)perylene	11		ug/kg	7.5	0.64	1
Fluorene	1.8	J	ug/kg	7.5	0.90	1
Phenanthrene	9.2		ug/kg	7.5	0.64	1
Dibenzo(a,h)anthracene	3.4	J	ug/kg	7.5	0.75	1
Indeno(1,2,3-cd)pyrene	12		ug/kg	7.5	0.90	1
Pyrene	33		ug/kg	7.5	0.53	1
1-Methylnaphthalene	ND		ug/kg	7.5	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.5	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-06  
 Client ID: OX-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 09:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 15:12  
 Analyst: MP  
 Percent Solids: 86%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.125	J	ng/g	0.546	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.546	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.273	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.09	0.071	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.546	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.09	0.091	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.273	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.273	0.066	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.273	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.546	0.196	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.546	0.149	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.273	0.082	1
Perfluorooctanesulfonic Acid (PFOS)	0.177	J	ng/g	0.273	0.142	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.273	0.073	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.546	0.314	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.09	0.327	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.546	0.220	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.546	0.051	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.546	0.167	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.546	0.107	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.546	0.092	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.546	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.546	0.224	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.546	0.059	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.9	4.16	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.09	0.045	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.73	0.131	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-06  
 Client ID: OX-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 09:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.73	0.187	1
PFAS, Total (6)	0.177	J	ng/g	0.273	0.046	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	39		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	55		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	130		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	105		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-07  
 Client ID: OX-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 10:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:20  
 Analyst: DV  
 Percent Solids: 65%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	21		ug/kg	10	2.1	1
2-Chloronaphthalene	ND		ug/kg	10	1.3	1
Fluoranthene	770		ug/kg	10	0.71	1
Naphthalene	10		ug/kg	10	1.8	1
Benzo(a)anthracene	660		ug/kg	10	0.97	1
Benzo(a)pyrene	580		ug/kg	10	1.2	1
Benzo(b)fluoranthene	760		ug/kg	10	0.97	1
Benzo(k)fluoranthene	230		ug/kg	10	0.92	1
Chrysene	500		ug/kg	10	0.76	1
Acenaphthylene	16		ug/kg	10	1.3	1
Anthracene	75		ug/kg	10	0.82	1
Benzo(ghi)perylene	330		ug/kg	10	0.87	1
Fluorene	18		ug/kg	10	1.2	1
Phenanthrene	260		ug/kg	10	0.87	1
Dibenzo(a,h)anthracene	100		ug/kg	10	1.0	1
Indeno(1,2,3-cd)pyrene	430		ug/kg	10	1.2	1
Pyrene	680		ug/kg	10	0.71	1
1-Methylnaphthalene	3.3	J	ug/kg	10	1.6	1
2-Methylnaphthalene	3.9	J	ug/kg	10	2.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-07  
**Client ID:** OX-03\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 10:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 12/11/21 15:28  
**Analyst:** MP  
**Percent Solids:** 65%

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.235	J	ng/g	0.698	0.032	1
Perfluoropentanoic Acid (PFPeA)	0.376	J	ng/g	0.698	0.064	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.349	0.054	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.40	0.090	1
Perfluorohexanoic Acid (PFHxA)	0.426	J	ng/g	0.698	0.073	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.40	0.116	1
Perfluoroheptanoic Acid (PFHpA)	0.102	J	ng/g	0.349	0.063	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.349	0.085	1
Perfluorooctanoic Acid (PFOA)	0.566		ng/g	0.349	0.059	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.698	0.251	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.698	0.191	1
Perfluorononanoic Acid (PFNA)	0.227	J	ng/g	0.349	0.105	1
Perfluorooctanesulfonic Acid (PFOS)	5.32		ng/g	0.349	0.182	1
Perfluorodecanoic Acid (PFDA)	0.164	J	ng/g	0.349	0.094	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.698	0.401	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.40	0.418	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.698	0.281	1
Perfluoroundecanoic Acid (PFUnA)	0.195	J	ng/g	0.698	0.065	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.698	0.214	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.698	0.137	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.291	J	ng/g	0.698	0.118	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.698	0.098	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.698	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.698	0.075	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	14.0	5.32	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.40	0.058	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.49	0.168	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-07  
 Client ID: OX-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 10:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.49	0.239	1
PFAS, Total (6)	6.38	J	ng/g	0.349	0.059	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	74		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	100		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	42		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-08  
 Client ID: FR-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 11:50  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:36  
 Analyst: DV  
 Percent Solids: 70%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	9.4	2.0	1
2-Chloronaphthalene	ND		ug/kg	9.4	1.2	1
Fluoranthene	6.6	J	ug/kg	9.4	0.66	1
Naphthalene	ND		ug/kg	9.4	1.7	1
Benzo(a)anthracene	7.6	J	ug/kg	9.4	0.89	1
Benzo(a)pyrene	3.2	J	ug/kg	9.4	1.1	1
Benzo(b)fluoranthene	5.3	J	ug/kg	9.4	0.89	1
Benzo(k)fluoranthene	1.5	J	ug/kg	9.4	0.85	1
Chrysene	3.4	J	ug/kg	9.4	0.71	1
Acenaphthylene	2.1	J	ug/kg	9.4	1.2	1
Anthracene	1.0	J	ug/kg	9.4	0.75	1
Benzo(ghi)perylene	2.5	J	ug/kg	9.4	0.80	1
Fluorene	ND		ug/kg	9.4	1.1	1
Phenanthrene	3.8	J	ug/kg	9.4	0.80	1
Dibenzo(a,h)anthracene	ND		ug/kg	9.4	0.94	1
Indeno(1,2,3-cd)pyrene	3.3	J	ug/kg	9.4	1.1	1
Pyrene	6.4	J	ug/kg	9.4	0.66	1
1-Methylnaphthalene	ND		ug/kg	9.4	1.5	1
2-Methylnaphthalene	ND		ug/kg	9.4	2.7	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-08  
 Client ID: FR-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 11:50  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 15:45  
 Analyst: MP  
 Percent Solids: 70%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.157	J	ng/g	0.690	0.031	1
Perfluoropentanoic Acid (PFPeA)	0.072	J	ng/g	0.690	0.064	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.345	0.054	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.38	0.089	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.690	0.073	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.38	0.115	1
Perfluoroheptanoic Acid (PFHpA)	0.115	J	ng/g	0.345	0.062	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.345	0.084	1
Perfluorooctanoic Acid (PFOA)	0.182	J	ng/g	0.345	0.058	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.690	0.248	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.690	0.188	1
Perfluorononanoic Acid (PFNA)	0.189	J	ng/g	0.345	0.104	1
Perfluorooctanesulfonic Acid (PFOS)	0.384		ng/g	0.345	0.180	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.345	0.093	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.690	0.396	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.38	0.413	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.690	0.278	1
Perfluoroundecanoic Acid (PFUnA)	0.133	J	ng/g	0.690	0.065	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.690	0.211	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.690	0.135	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.690	0.117	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.690	0.097	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.690	0.282	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.690	0.075	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.8	5.26	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.38	0.057	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.45	0.166	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-08  
 Client ID: FR-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 11:50  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.45	0.236	1
PFAS, Total (6)	0.870	J	ng/g	0.345	0.058	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	86		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	124		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	70		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-09  
 Client ID: FR-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 16:01  
 Analyst: MP  
 Percent Solids: 75%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.123	J	ng/g	0.592	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.062	J	ng/g	0.592	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.296	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	0.079	J	ng/g	0.592	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.099	1
Perfluoroheptanoic Acid (PFHpA)	0.100	J	ng/g	0.296	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.296	0.072	1
Perfluorooctanoic Acid (PFOA)	0.224	J	ng/g	0.296	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.592	0.213	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.592	0.162	1
Perfluorononanoic Acid (PFNA)	0.112	J	ng/g	0.296	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.291	J	ng/g	0.296	0.154	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.296	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.592	0.340	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.354	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.592	0.239	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.592	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.592	0.181	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.592	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.592	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.592	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.592	0.242	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.592	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.8	4.52	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.18	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.96	0.142	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-09  
 Client ID: FR-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.96	0.203	1
PFAS, Total (6)	0.727	J	ng/g	0.296	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	72		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		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)	24	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	23	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	109		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	84		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-09 D  
 Client ID: FR-04\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/11/21 15:25  
 Analyst: DV  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	230	J	ug/kg	880	180	100
2-Chloronaphthalene	ND		ug/kg	880	110	100
Fluoranthene	24000		ug/kg	880	62.	100
Naphthalene	260	J	ug/kg	880	160	100
Benzo(a)anthracene	19000		ug/kg	880	84.	100
Benzo(a)pyrene	12000		ug/kg	880	100	100
Benzo(b)fluoranthene	15000		ug/kg	880	84.	100
Benzo(k)fluoranthene	5200		ug/kg	880	79.	100
Chrysene	11000		ug/kg	880	66.	100
Acenaphthylene	3800		ug/kg	880	110	100
Anthracene	2600		ug/kg	880	70.	100
Benzo(ghi)perylene	7600		ug/kg	880	75.	100
Fluorene	1100		ug/kg	880	100	100
Phenanthrene	7600		ug/kg	880	75.	100
Dibenzo(a,h)anthracene	2200		ug/kg	880	88.	100
Indeno(1,2,3-cd)pyrene	9100		ug/kg	880	100	100
Pyrene	22000		ug/kg	880	62.	100
1-Methylnaphthalene	200	J	ug/kg	880	140	100
2-Methylnaphthalene	ND		ug/kg	880	250	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-10  
 Client ID: FR-04\_20211116-DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 16:18  
 Analyst: MP  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.138	J	ng/g	0.597	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.072	J	ng/g	0.597	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.299	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.090	J	ng/g	0.597	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.100	1
Perfluoroheptanoic Acid (PFHpA)	0.106	J	ng/g	0.299	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.299	0.072	1
Perfluorooctanoic Acid (PFOA)	0.235	J	ng/g	0.299	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.597	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.597	0.163	1
Perfluorononanoic Acid (PFNA)	0.131	J	ng/g	0.299	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	0.312		ng/g	0.299	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.299	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.597	0.343	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.357	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.597	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.597	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.597	0.183	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.597	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.597	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.597	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.597	0.244	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.597	0.065	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.9	4.55	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.19	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.99	0.143	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-10  
 Client ID: FR-04\_20211116-DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.99	0.204	1
PFAS, Total (6)	0.784	J	ng/g	0.299	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		14-167
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)	82		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	19	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	21	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	97		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-10 D  
 Client ID: FR-04\_20211116-DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 12:55  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/11/21 15:41  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	550	J	ug/kg	900	190	100
2-Chloronaphthalene	ND		ug/kg	900	120	100
Fluoranthene	36000		ug/kg	900	63.	100
Naphthalene	220	J	ug/kg	900	160	100
Benzo(a)anthracene	25000		ug/kg	900	86.	100
Benzo(a)pyrene	14000		ug/kg	900	110	100
Benzo(b)fluoranthene	19000		ug/kg	900	86.	100
Benzo(k)fluoranthene	6400		ug/kg	900	81.	100
Chrysene	14000		ug/kg	900	68.	100
Acenaphthylene	5100		ug/kg	900	110	100
Anthracene	5700		ug/kg	900	72.	100
Benzo(ghi)perylene	8600		ug/kg	900	77.	100
Fluorene	3600		ug/kg	900	110	100
Phenanthrene	20000		ug/kg	900	77.	100
Dibenzo(a,h)anthracene	2800		ug/kg	900	90.	100
Indeno(1,2,3-cd)pyrene	10000		ug/kg	900	110	100
Pyrene	29000		ug/kg	900	63.	100
1-Methylnaphthalene	250	J	ug/kg	900	140	100
2-Methylnaphthalene	ND		ug/kg	900	260	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-11  
 Client ID: FR-02\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 14:25  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:53  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.9	1.7	1
2-Chloronaphthalene	ND		ug/kg	7.9	1.0	1
Fluoranthene	30		ug/kg	7.9	0.56	1
Naphthalene	1.5	J	ug/kg	7.9	1.4	1
Benzo(a)anthracene	20		ug/kg	7.9	0.75	1
Benzo(a)pyrene	15		ug/kg	7.9	0.95	1
Benzo(b)fluoranthene	22		ug/kg	7.9	0.75	1
Benzo(k)fluoranthene	7.8	J	ug/kg	7.9	0.71	1
Chrysene	16		ug/kg	7.9	0.60	1
Acenaphthylene	6.1	J	ug/kg	7.9	0.99	1
Anthracene	3.4	J	ug/kg	7.9	0.64	1
Benzo(ghi)perylene	11		ug/kg	7.9	0.68	1
Fluorene	1.0	J	ug/kg	7.9	0.95	1
Phenanthrene	14		ug/kg	7.9	0.68	1
Dibenzo(a,h)anthracene	3.0	J	ug/kg	7.9	0.79	1
Indeno(1,2,3-cd)pyrene	14		ug/kg	7.9	0.95	1
Pyrene	27		ug/kg	7.9	0.56	1
1-Methylnaphthalene	ND		ug/kg	7.9	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.9	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-11  
 Client ID: FR-02\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 14:25  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 16:51  
 Analyst: MP  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.572	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.572	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.286	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.074	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.572	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.096	1
Perfluoroheptanoic Acid (PFHpA)	0.072	J	ng/g	0.286	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.286	0.069	1
Perfluorooctanoic Acid (PFOA)	0.400		ng/g	0.286	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.572	0.205	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.572	0.156	1
Perfluorononanoic Acid (PFNA)	0.350		ng/g	0.286	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	1.00		ng/g	0.286	0.149	1
Perfluorodecanoic Acid (PFDA)	0.198	J	ng/g	0.286	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.572	0.328	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.342	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.572	0.230	1
Perfluoroundecanoic Acid (PFUnA)	0.101	J	ng/g	0.572	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.572	0.175	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.572	0.112	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.572	0.097	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.572	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.572	0.234	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.572	0.062	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.4	4.36	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.14	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.86	0.137	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-11  
 Client ID: FR-02\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 14:25  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.86	0.196	1
PFAS, Total (6)	2.02	J	ng/g	0.286	0.048	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	58	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	63		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	70	Q	74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	57	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75	Q	78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	61	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76	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)	78		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	8	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	11	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	79		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	63		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-12  
 Client ID: FR-01\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 15:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 17:07  
 Analyst: MP  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.030	J	ng/g	0.530	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.530	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.265	0.041	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.06	0.068	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.530	0.056	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.06	0.088	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.265	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.265	0.064	1
Perfluorooctanoic Acid (PFOA)	0.055	J	ng/g	0.265	0.044	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.530	0.190	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.530	0.144	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.265	0.079	1
Perfluorooctanesulfonic Acid (PFOS)	0.551		ng/g	0.265	0.138	1
Perfluorodecanoic Acid (PFDA)	0.086	J	ng/g	0.265	0.071	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.530	0.304	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.06	0.317	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.530	0.213	1
Perfluoroundecanoic Acid (PFUnA)	0.10	J	ng/g	0.530	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.530	0.162	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.530	0.104	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.530	0.090	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.530	0.074	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.530	0.217	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.530	0.057	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.6	4.04	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.06	0.044	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.65	0.127	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-12  
 Client ID: FR-01\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 15:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.65	0.181	1
PFAS, Total (6)	0.692	J	ng/g	0.265	0.044	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		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)	81		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		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)	117		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	119		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	115		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	126		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	116		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-12 D  
 Client ID: FR-01\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 15:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/11/21 15:58  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	34	J	ug/kg	80	17.	10
2-Chloronaphthalene	ND		ug/kg	80	10.	10
Fluoranthene	3500		ug/kg	80	5.6	10
Naphthalene	73	J	ug/kg	80	14.	10
Benzo(a)anthracene	3500		ug/kg	80	7.6	10
Benzo(a)pyrene	2200		ug/kg	80	9.6	10
Benzo(b)fluoranthene	2500		ug/kg	80	7.6	10
Benzo(k)fluoranthene	800		ug/kg	80	7.2	10
Chrysene	2000		ug/kg	80	6.0	10
Acenaphthylene	1100		ug/kg	80	10.	10
Anthracene	460		ug/kg	80	6.4	10
Benzo(ghi)perylene	1600		ug/kg	80	6.8	10
Fluorene	150		ug/kg	80	9.6	10
Phenanthrene	1200		ug/kg	80	6.8	10
Dibenzo(a,h)anthracene	360		ug/kg	80	8.0	10
Indeno(1,2,3-cd)pyrene	1700		ug/kg	80	9.6	10
Pyrene	4200		ug/kg	80	5.6	10
1-Methylnaphthalene	27	J	ug/kg	80	12.	10
2-Methylnaphthalene	38	J	ug/kg	80	23.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-13  
 Client ID: WL-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 17:47  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.9	1.7	1
2-Chloronaphthalene	ND		ug/kg	7.9	1.0	1
Fluoranthene	1.3	J	ug/kg	7.9	0.55	1
Naphthalene	ND		ug/kg	7.9	1.4	1
Benzo(a)anthracene	1.1	J	ug/kg	7.9	0.75	1
Benzo(a)pyrene	ND		ug/kg	7.9	0.95	1
Benzo(b)fluoranthene	0.91	J	ug/kg	7.9	0.75	1
Benzo(k)fluoranthene	ND		ug/kg	7.9	0.71	1
Chrysene	0.75	J	ug/kg	7.9	0.59	1
Acenaphthylene	ND		ug/kg	7.9	0.99	1
Anthracene	ND		ug/kg	7.9	0.63	1
Benzo(ghi)perylene	ND		ug/kg	7.9	0.67	1
Fluorene	ND		ug/kg	7.9	0.95	1
Phenanthrene	0.83	J	ug/kg	7.9	0.67	1
Dibenzo(a,h)anthracene	ND		ug/kg	7.9	0.79	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	7.9	0.95	1
Pyrene	1.3	J	ug/kg	7.9	0.55	1
1-Methylnaphthalene	ND		ug/kg	7.9	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.9	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-13  
 Client ID: WL-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 17:24  
 Analyst: MP  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.096	J	ng/g	0.579	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.579	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.290	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.16	0.075	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.579	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.16	0.097	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.290	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.290	0.070	1
Perfluorooctanoic Acid (PFOA)	0.081	J	ng/g	0.290	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.579	0.208	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.579	0.158	1
Perfluorononanoic Acid (PFNA)	0.095	J	ng/g	0.290	0.087	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.290	0.151	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.290	0.078	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.579	0.332	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.16	0.346	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.579	0.233	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.579	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.579	0.177	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.579	0.114	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.579	0.098	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.579	0.081	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.579	0.237	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.579	0.063	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.6	4.41	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.16	0.048	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.90	0.139	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-13  
 Client ID: WL-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.90	0.198	1
PFAS, Total (6)	0.176	J	ng/g	0.290	0.049	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		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)	51		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	98		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	120		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	83		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-14  
 Client ID: KE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 09:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:03  
 Analyst: DV  
 Percent Solids: 72%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	9.1	1.9	1
2-Chloronaphthalene	ND		ug/kg	9.1	1.2	1
Fluoranthene	16		ug/kg	9.1	0.64	1
Naphthalene	ND		ug/kg	9.1	1.6	1
Benzo(a)anthracene	8.9	J	ug/kg	9.1	0.87	1
Benzo(a)pyrene	7.7	J	ug/kg	9.1	1.1	1
Benzo(b)fluoranthene	11		ug/kg	9.1	0.87	1
Benzo(k)fluoranthene	5.8	J	ug/kg	9.1	0.82	1
Chrysene	9.4		ug/kg	9.1	0.68	1
Acenaphthylene	2.1	J	ug/kg	9.1	1.1	1
Anthracene	1.9	J	ug/kg	9.1	0.73	1
Benzo(ghi)perylene	5.4	J	ug/kg	9.1	0.78	1
Fluorene	ND		ug/kg	9.1	1.1	1
Phenanthrene	6.7	J	ug/kg	9.1	0.78	1
Dibenzo(a,h)anthracene	2.6	J	ug/kg	9.1	0.91	1
Indeno(1,2,3-cd)pyrene	6.4	J	ug/kg	9.1	1.1	1
Pyrene	14		ug/kg	9.1	0.64	1
1-Methylnaphthalene	ND		ug/kg	9.1	1.4	1
2-Methylnaphthalene	ND		ug/kg	9.1	2.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-14  
 Client ID: KE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 09:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 17:41  
 Analyst: MP  
 Percent Solids: 72%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.088	J	ng/g	0.662	0.030	1
Perfluoropentanoic Acid (PFPeA)	0.088	J	ng/g	0.662	0.061	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.331	0.052	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.32	0.085	1
Perfluorohexanoic Acid (PFHxA)	0.111	J	ng/g	0.662	0.070	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.32	0.111	1
Perfluoroheptanoic Acid (PFHpA)	0.221	J	ng/g	0.331	0.060	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.331	0.080	1
Perfluorooctanoic Acid (PFOA)	0.563		ng/g	0.331	0.056	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.662	0.238	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.662	0.181	1
Perfluorononanoic Acid (PFNA)	0.545		ng/g	0.331	0.099	1
Perfluorooctanesulfonic Acid (PFOS)	1.08		ng/g	0.331	0.172	1
Perfluorodecanoic Acid (PFDA)	0.191	J	ng/g	0.331	0.089	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.662	0.380	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.32	0.396	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.662	0.267	1
Perfluoroundecanoic Acid (PFUnA)	0.166	J	ng/g	0.662	0.062	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.662	0.203	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.662	0.130	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.662	0.112	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.662	0.093	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.662	0.271	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.662	0.072	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.2	5.05	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.32	0.055	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.31	0.159	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-14  
 Client ID: KE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 09:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.31	0.226	1
PFAS, Total (6)	2.60	J	ng/g	0.331	0.056	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	23	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	52		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	31	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	63		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-15  
 Client ID: KE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:20  
 Analyst: DV  
 Percent Solids: 68%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	28	5.9	1
2-Chloronaphthalene	ND		ug/kg	28	3.6	1
Fluoranthene	3.5	J	ug/kg	28	2.0	1
Naphthalene	ND		ug/kg	28	5.0	1
Benzo(a)anthracene	2.9	J	ug/kg	28	2.6	1
Benzo(a)pyrene	ND		ug/kg	28	3.4	1
Benzo(b)fluoranthene	ND		ug/kg	28	2.6	1
Benzo(k)fluoranthene	ND		ug/kg	28	2.5	1
Chrysene	2.1	J	ug/kg	28	2.1	1
Acenaphthylene	ND		ug/kg	28	3.5	1
Anthracene	ND		ug/kg	28	2.2	1
Benzo(ghi)perylene	ND		ug/kg	28	2.4	1
Fluorene	ND		ug/kg	28	3.4	1
Phenanthrene	ND		ug/kg	28	2.4	1
Dibenzo(a,h)anthracene	ND		ug/kg	28	2.8	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	28	3.4	1
Pyrene	3.1	J	ug/kg	28	2.0	1
1-Methylnaphthalene	ND		ug/kg	28	4.3	1
2-Methylnaphthalene	ND		ug/kg	28	8.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-15  
 Client ID: KE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 17:57  
 Analyst: MP  
 Percent Solids: 68%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.056	J	ng/g	0.662	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.662	0.061	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.331	0.052	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.32	0.085	1
Perfluorohexanoic Acid (PFHxA)	0.070	J	ng/g	0.662	0.070	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.32	0.111	1
Perfluoroheptanoic Acid (PFHpA)	0.066	J	ng/g	0.331	0.060	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.331	0.080	1
Perfluorooctanoic Acid (PFOA)	0.156	J	ng/g	0.331	0.056	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.662	0.238	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.662	0.181	1
Perfluorononanoic Acid (PFNA)	0.174	J	ng/g	0.331	0.099	1
Perfluorooctanesulfonic Acid (PFOS)	0.366		ng/g	0.331	0.172	1
Perfluorodecanoic Acid (PFDA)	0.099	J	ng/g	0.331	0.089	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.662	0.380	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.32	0.396	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.662	0.267	1
Perfluoroundecanoic Acid (PFUnA)	0.070	J	ng/g	0.662	0.062	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.662	0.203	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.662	0.130	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.662	0.112	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.662	0.093	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.662	0.271	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.662	0.072	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	13.2	5.05	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.32	0.055	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.31	0.159	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-15  
 Client ID: KE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.31	0.226	1
PFAS, Total (6)	0.861	J	ng/g	0.331	0.056	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		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)	80		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	114		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-16  
 Client ID: KE-01\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 11:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:36  
 Analyst: DV  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	16		ug/kg	8.3	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.3	1.1	1
Fluoranthene	710		ug/kg	8.3	0.58	1
Naphthalene	31		ug/kg	8.3	1.5	1
Benzo(a)anthracene	340		ug/kg	8.3	0.79	1
Benzo(a)pyrene	320		ug/kg	8.3	0.99	1
Benzo(b)fluoranthene	410		ug/kg	8.3	0.79	1
Benzo(k)fluoranthene	150		ug/kg	8.3	0.74	1
Chrysene	320		ug/kg	8.3	0.62	1
Acenaphthylene	91		ug/kg	8.3	1.0	1
Anthracene	82		ug/kg	8.3	0.66	1
Benzo(ghi)perylene	240		ug/kg	8.3	0.70	1
Fluorene	25		ug/kg	8.3	0.99	1
Phenanthrene	340		ug/kg	8.3	0.70	1
Dibenzo(a,h)anthracene	56		ug/kg	8.3	0.83	1
Indeno(1,2,3-cd)pyrene	250		ug/kg	8.3	0.99	1
Pyrene	630		ug/kg	8.3	0.58	1
1-Methylnaphthalene	8.9		ug/kg	8.3	1.3	1
2-Methylnaphthalene	11		ug/kg	8.3	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	48		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-16  
 Client ID: KE-01\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 11:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 18:14  
 Analyst: MP  
 Percent Solids: 79%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.717		ng/g	0.556	0.025	1
Perfluoropentanoic Acid (PFPeA)	1.02		ng/g	0.556	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.278	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.072	1
Perfluorohexanoic Acid (PFHxA)	1.49		ng/g	0.556	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.11	0.093	1
Perfluoroheptanoic Acid (PFHpA)	1.62		ng/g	0.278	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.278	0.067	1
Perfluorooctanoic Acid (PFOA)	5.29		ng/g	0.278	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.556	0.199	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.556	0.152	1
Perfluorononanoic Acid (PFNA)	1.93		ng/g	0.278	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	2.27		ng/g	0.278	0.144	1
Perfluorodecanoic Acid (PFDA)	3.24		ng/g	0.278	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.556	0.319	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.332	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.556	0.224	1
Perfluoroundecanoic Acid (PFUnA)	0.944		ng/g	0.556	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.556	0.170	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.556	0.109	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.556	0.094	1
Perfluorododecanoic Acid (PFDoA)	0.841		ng/g	0.556	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.556	0.227	1
Perfluorotetradecanoic Acid (PFTA)	0.277	J	ng/g	0.556	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.1	4.23	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.11	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.78	0.133	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-16  
 Client ID: KE-01\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 11:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.78	0.190	1
PFAS, Total (6)	14.4		ng/g	0.278	0.047	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	73		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	118		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-17  
 Client ID: KE-03\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 18:52  
 Analyst: DV  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.8	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.8	1.0	1
Fluoranthene	43		ug/kg	7.8	0.54	1
Naphthalene	2.5	J	ug/kg	7.8	1.4	1
Benzo(a)anthracene	19		ug/kg	7.8	0.74	1
Benzo(a)pyrene	21		ug/kg	7.8	0.93	1
Benzo(b)fluoranthene	32		ug/kg	7.8	0.74	1
Benzo(k)fluoranthene	11		ug/kg	7.8	0.70	1
Chrysene	23		ug/kg	7.8	0.58	1
Acenaphthylene	9.1		ug/kg	7.8	0.97	1
Anthracene	3.9	J	ug/kg	7.8	0.62	1
Benzo(ghi)perylene	14		ug/kg	7.8	0.66	1
Fluorene	1.3	J	ug/kg	7.8	0.93	1
Phenanthrene	17		ug/kg	7.8	0.66	1
Dibenzo(a,h)anthracene	3.9	J	ug/kg	7.8	0.78	1
Indeno(1,2,3-cd)pyrene	17		ug/kg	7.8	0.93	1
Pyrene	42		ug/kg	7.8	0.54	1
1-Methylnaphthalene	ND		ug/kg	7.8	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.8	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-17  
 Client ID: KE-03\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 18:30  
 Analyst: MP  
 Percent Solids: 84%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.178	J	ng/g	0.551	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.089	J	ng/g	0.551	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.276	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.10	0.071	1
Perfluorohexanoic Acid (PFHxA)	0.092	J	ng/g	0.551	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.10	0.092	1
Perfluoroheptanoic Acid (PFHpA)	0.080	J	ng/g	0.276	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.276	0.067	1
Perfluorooctanoic Acid (PFOA)	0.155	J	ng/g	0.276	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.551	0.198	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.551	0.150	1
Perfluorononanoic Acid (PFNA)	0.138	J	ng/g	0.276	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.968		ng/g	0.276	0.143	1
Perfluorodecanoic Acid (PFDA)	0.094	J	ng/g	0.276	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.551	0.316	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.10	0.330	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.551	0.222	1
Perfluoroundecanoic Acid (PFUnA)	0.083	J	ng/g	0.551	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.551	0.169	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.551	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.551	0.093	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.551	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.551	0.225	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.551	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.0	4.20	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.10	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.76	0.132	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-17  
 Client ID: KE-03\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.76	0.188	1
PFAS, Total (6)	1.43	J	ng/g	0.276	0.046	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	45		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	111		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	116		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	99		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-18  
 Client ID: SA-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 19:09  
 Analyst: DV  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.0	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.0	1.0	1
Fluoranthene	15		ug/kg	8.0	0.56	1
Naphthalene	ND		ug/kg	8.0	1.4	1
Benzo(a)anthracene	10		ug/kg	8.0	0.76	1
Benzo(a)pyrene	9.4		ug/kg	8.0	0.96	1
Benzo(b)fluoranthene	13		ug/kg	8.0	0.76	1
Benzo(k)fluoranthene	4.7	J	ug/kg	8.0	0.72	1
Chrysene	7.7	J	ug/kg	8.0	0.60	1
Acenaphthylene	1.6	J	ug/kg	8.0	1.0	1
Anthracene	1.4	J	ug/kg	8.0	0.64	1
Benzo(ghi)perylene	5.0	J	ug/kg	8.0	0.68	1
Fluorene	ND		ug/kg	8.0	0.96	1
Phenanthrene	3.5	J	ug/kg	8.0	0.68	1
Dibenzo(a,h)anthracene	1.6	J	ug/kg	8.0	0.80	1
Indeno(1,2,3-cd)pyrene	7.0	J	ug/kg	8.0	0.96	1
Pyrene	14		ug/kg	8.0	0.56	1
1-Methylnaphthalene	ND		ug/kg	8.0	1.2	1
2-Methylnaphthalene	ND		ug/kg	8.0	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	54		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-18  
 Client ID: SA-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 18:47  
 Analyst: MP  
 Percent Solids: 82%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.092	J	ng/g	0.569	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.569	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.284	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.569	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.095	1
Perfluoroheptanoic Acid (PFHpA)	0.063	J	ng/g	0.284	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.284	0.069	1
Perfluorooctanoic Acid (PFOA)	0.146	J	ng/g	0.284	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.569	0.204	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.569	0.155	1
Perfluorononanoic Acid (PFNA)	0.096	J	ng/g	0.284	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	0.173	J	ng/g	0.284	0.148	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.284	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.569	0.326	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.340	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.569	0.229	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.569	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.569	0.174	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.569	0.111	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.569	0.096	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.569	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.569	0.232	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.569	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.4	4.33	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.14	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.84	0.136	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-18  
 Client ID: SA-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.84	0.194	1
PFAS, Total (6)	0.478	J	ng/g	0.284	0.048	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		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)	75		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	17	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	22	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	105		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-19  
 Client ID: LI-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 19:25  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.9	1.9	1
2-Chloronaphthalene	ND		ug/kg	8.9	1.2	1
Fluoranthene	3.0	J	ug/kg	8.9	0.62	1
Naphthalene	ND		ug/kg	8.9	1.6	1
Benzo(a)anthracene	1.7	J	ug/kg	8.9	0.84	1
Benzo(a)pyrene	1.3	J	ug/kg	8.9	1.1	1
Benzo(b)fluoranthene	1.9	J	ug/kg	8.9	0.84	1
Benzo(k)fluoranthene	ND		ug/kg	8.9	0.80	1
Chrysene	1.5	J	ug/kg	8.9	0.67	1
Acenaphthylene	ND		ug/kg	8.9	1.1	1
Anthracene	ND		ug/kg	8.9	0.71	1
Benzo(ghi)perylene	0.89	J	ug/kg	8.9	0.76	1
Fluorene	ND		ug/kg	8.9	1.1	1
Phenanthrene	1.4	J	ug/kg	8.9	0.76	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.9	0.89	1
Indeno(1,2,3-cd)pyrene	1.1	J	ug/kg	8.9	1.1	1
Pyrene	2.7	J	ug/kg	8.9	0.62	1
1-Methylnaphthalene	ND		ug/kg	8.9	1.4	1
2-Methylnaphthalene	ND		ug/kg	8.9	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-19  
 Client ID: LI-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 19:03  
 Analyst: MP  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.064	J	ng/g	0.639	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.639	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.319	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.28	0.082	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.639	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.28	0.107	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.319	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.319	0.077	1
Perfluorooctanoic Acid (PFOA)	0.089	J	ng/g	0.319	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.639	0.229	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.639	0.174	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.319	0.096	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.319	0.166	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.319	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.639	0.367	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.28	0.382	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.639	0.257	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.639	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.639	0.196	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.639	0.125	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.639	0.108	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.639	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.639	0.261	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.639	0.069	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.8	4.87	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.28	0.053	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.19	0.153	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-19  
 Client ID: LI-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.19	0.218	1
PFAS, Total (6)	0.089	J	ng/g	0.319	0.054	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	124		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	84		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-20  
 Client ID: SA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 16:58  
 Analyst: DV  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	27		ug/kg	8.3	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.3	1.1	1
Fluoranthene	420		ug/kg	8.3	0.58	1
Naphthalene	13		ug/kg	8.3	1.5	1
Benzo(a)anthracene	320		ug/kg	8.3	0.78	1
Benzo(a)pyrene	240		ug/kg	8.3	0.99	1
Benzo(b)fluoranthene	310		ug/kg	8.3	0.78	1
Benzo(k)fluoranthene	99		ug/kg	8.3	0.74	1
Chrysene	270		ug/kg	8.3	0.62	1
Acenaphthylene	42		ug/kg	8.3	1.0	1
Anthracene	63		ug/kg	8.3	0.66	1
Benzo(ghi)perylene	150		ug/kg	8.3	0.70	1
Fluorene	22		ug/kg	8.3	0.99	1
Phenanthrene	200		ug/kg	8.3	0.70	1
Dibenzo(a,h)anthracene	41		ug/kg	8.3	0.83	1
Indeno(1,2,3-cd)pyrene	180		ug/kg	8.3	0.99	1
Pyrene	390		ug/kg	8.3	0.58	1
1-Methylnaphthalene	5.7	J	ug/kg	8.3	1.3	1
2-Methylnaphthalene	7.0	J	ug/kg	8.3	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	70		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-20  
 Client ID: SA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 19:20  
 Analyst: MP  
 Percent Solids: 78%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.052	J	ng/g	0.561	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.063	J	ng/g	0.561	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.280	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.12	0.072	1
Perfluorohexanoic Acid (PFHxA)	0.104	J	ng/g	0.561	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.12	0.094	1
Perfluoroheptanoic Acid (PFHpA)	0.207	J	ng/g	0.280	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.280	0.068	1
Perfluorooctanoic Acid (PFOA)	2.18		ng/g	0.280	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.561	0.201	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.561	0.153	1
Perfluorononanoic Acid (PFNA)	2.02		ng/g	0.280	0.084	1
Perfluorooctanesulfonic Acid (PFOS)	4.35		ng/g	0.280	0.146	1
Perfluorodecanoic Acid (PFDA)	3.22		ng/g	0.280	0.075	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.561	0.322	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.12	0.335	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.561	0.226	1
Perfluoroundecanoic Acid (PFUnA)	1.93		ng/g	0.561	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	0.224	J	ng/g	0.561	0.172	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.561	0.110	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.124	J	ng/g	0.561	0.095	1
Perfluorododecanoic Acid (PFDoA)	0.610		ng/g	0.561	0.079	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.561	0.229	1
Perfluorotetradecanoic Acid (PFTA)	0.131	J	ng/g	0.561	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.2	4.27	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.12	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.80	0.134	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-20  
 Client ID: SA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.80	0.192	1
PFAS, Total (6)	12.0	J	ng/g	0.280	0.047	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	131		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	108		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	119		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	90		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-21  
 Client ID: AN-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 17:14  
 Analyst: DV  
 Percent Solids: 57%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	34	7.2	1
2-Chloronaphthalene	ND		ug/kg	34	4.4	1
Fluoranthene	260		ug/kg	34	2.4	1
Naphthalene	12	J	ug/kg	34	6.2	1
Benzo(a)anthracene	160		ug/kg	34	3.2	1
Benzo(a)pyrene	120		ug/kg	34	4.1	1
Benzo(b)fluoranthene	160		ug/kg	34	3.2	1
Benzo(k)fluoranthene	52		ug/kg	34	3.1	1
Chrysene	120		ug/kg	34	2.6	1
Acenaphthylene	39		ug/kg	34	4.3	1
Anthracene	27	J	ug/kg	34	2.7	1
Benzo(ghi)perylene	82		ug/kg	34	2.9	1
Fluorene	12	J	ug/kg	34	4.1	1
Phenanthrene	140		ug/kg	34	2.9	1
Dibenzo(a,h)anthracene	21	J	ug/kg	34	3.4	1
Indeno(1,2,3-cd)pyrene	98		ug/kg	34	4.1	1
Pyrene	230		ug/kg	34	2.4	1
1-Methylnaphthalene	5.5	J	ug/kg	34	5.3	1
2-Methylnaphthalene	ND		ug/kg	34	9.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	29		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-21  
 Client ID: AN-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 14:50  
 Analyst: SG  
 Percent Solids: 57%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.327	J	ng/g	0.803	0.036	1
Perfluoropentanoic Acid (PFPeA)	0.159	J	ng/g	0.803	0.074	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.401	0.063	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.60	0.104	1
Perfluorohexanoic Acid (PFHxA)	0.183	J	ng/g	0.803	0.084	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.60	0.134	1
Perfluoroheptanoic Acid (PFHpA)	0.246	J	ng/g	0.401	0.072	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.401	0.097	1
Perfluorooctanoic Acid (PFOA)	0.594	F	ng/g	0.401	0.067	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.803	0.288	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.803	0.219	1
Perfluorononanoic Acid (PFNA)	0.246	J	ng/g	0.401	0.120	1
Perfluorooctanesulfonic Acid (PFOS)	0.792		ng/g	0.401	0.209	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.401	0.108	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.803	0.461	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.60	0.480	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.803	0.324	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.803	0.075	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.803	0.246	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.803	0.157	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.803	0.136	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.803	0.112	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.803	0.328	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.803	0.087	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	16.0	6.12	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.60	0.066	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	4.01	0.193	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-21  
 Client ID: AN-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	4.01	0.274	1
PFAS, Total (6)	1.88	J	ng/g	0.401	0.067	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	51	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	63		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	43	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	44	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	46	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	48	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	55	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	204	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	24	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	55		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	49		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	17		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-22  
 Client ID: AN-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 14:24  
 Analyst: DV  
 Percent Solids: 24%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	77	16.	1
2-Chloronaphthalene	ND		ug/kg	77	10.	1
Fluoranthene	300		ug/kg	77	5.4	1
Naphthalene	75	J	ug/kg	77	14.	1
Benzo(a)anthracene	140		ug/kg	77	7.3	1
Benzo(a)pyrene	100		ug/kg	77	9.3	1
Benzo(b)fluoranthene	190		ug/kg	77	7.3	1
Benzo(k)fluoranthene	67	J	ug/kg	77	6.9	1
Chrysene	180		ug/kg	77	5.8	1
Acenaphthylene	59	J	ug/kg	77	9.6	1
Anthracene	59	J	ug/kg	77	6.2	1
Benzo(ghi)perylene	83		ug/kg	77	6.6	1
Fluorene	24	J	ug/kg	77	9.3	1
Phenanthrene	240		ug/kg	77	6.6	1
Dibenzo(a,h)anthracene	ND		ug/kg	77	7.7	1
Indeno(1,2,3-cd)pyrene	100		ug/kg	77	9.3	1
Pyrene	290		ug/kg	77	5.4	1
1-Methylnaphthalene	29	J	ug/kg	77	12.	1
2-Methylnaphthalene	25	J	ug/kg	77	22.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-22  
 Client ID: AN-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 15:24  
 Analyst: SG  
 Percent Solids: 24%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.293	J	ng/g	1.83	0.083	1
Perfluoropentanoic Acid (PFPeA)	0.298	J	ng/g	1.83	0.168	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.915	0.143	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.66	0.236	1
Perfluorohexanoic Acid (PFHxA)	0.276	JF	ng/g	1.83	0.192	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.66	0.306	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.915	0.165	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.915	0.221	1
Perfluorooctanoic Acid (PFOA)	1.68	F	ng/g	0.915	0.153	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.83	0.657	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.83	0.499	1
Perfluorononanoic Acid (PFNA)	0.907	J	ng/g	0.915	0.274	1
Perfluorooctanesulfonic Acid (PFOS)	3.14	F	ng/g	0.915	0.476	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.915	0.245	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.83	1.05	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.66	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.83	0.737	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.83	0.171	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.83	0.560	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.83	0.359	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.83	0.309	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.83	0.256	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.83	0.748	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.83	0.198	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	36.6	13.9	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	3.66	0.151	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	9.15	0.439	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-22  
 Client ID: AN-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	9.15	0.626	1
PFAS, Total (6)	5.73	J	ng/g	0.915	0.153	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>456</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>56</b>	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	<b>54</b>	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>53</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>540</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>48</b>	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>47</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>920</b>	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>57</b>	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	39		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-23  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 20:12  
 Analyst: DV  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	12		ug/kg	8.3	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.3	1.1	1
Fluoranthene	530		ug/kg	8.3	0.58	1
Naphthalene	16		ug/kg	8.3	1.5	1
Benzo(a)anthracene	470		ug/kg	8.3	0.79	1
Benzo(a)pyrene	330		ug/kg	8.3	1.0	1
Benzo(b)fluoranthene	400		ug/kg	8.3	0.79	1
Benzo(k)fluoranthene	130		ug/kg	8.3	0.75	1
Chrysene	270		ug/kg	8.3	0.62	1
Acenaphthylene	120		ug/kg	8.3	1.0	1
Anthracene	89		ug/kg	8.3	0.67	1
Benzo(ghi)perylene	260		ug/kg	8.3	0.71	1
Fluorene	25		ug/kg	8.3	1.0	1
Phenanthrene	210		ug/kg	8.3	0.71	1
Dibenzo(a,h)anthracene	64		ug/kg	8.3	0.83	1
Indeno(1,2,3-cd)pyrene	290		ug/kg	8.3	1.0	1
Pyrene	510		ug/kg	8.3	0.58	1
1-Methylnaphthalene	7.0	J	ug/kg	8.3	1.3	1
2-Methylnaphthalene	8.0	J	ug/kg	8.3	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-23  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 15:57  
 Analyst: SG  
 Percent Solids: 79%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.591	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.591	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.295	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.591	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.295	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.295	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.295	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.591	0.212	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.591	0.161	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.295	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.413		ng/g	0.295	0.154	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.295	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.591	0.339	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.353	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.591	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.591	0.181	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.591	0.116	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.591	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.591	0.242	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.591	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.8	4.50	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.18	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.95	0.142	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.95	0.202	1
PFAS, Total (6)	0.413		ng/g	0.295	0.050	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-23  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 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)			32	Q		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			41	Q		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			77			74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			119			14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			31	Q		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			35	Q		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			76	Q		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)			38	Q		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			133			20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			44	Q		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			85			79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			46	Q		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			196	Q		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			2	Q		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			56	Q		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			2	Q		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			47	Q		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			43			24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			37			10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)			24			10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-23  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/07/21 11:30  
 Analyst: RS  
 Percent Solids: 79%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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## Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.591	0.116	1
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Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
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Perfluoro[13C8]Octanesulfonamide (M8FOSA)	72		10-117
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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-23 RE  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 15:58  
 Analyst: SG  
 Percent Solids: 79%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.20	0.886	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.23	F	ng/g	2.20	0.372	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	7	Q	31-134
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	12	Q	34-137

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-24  
 Client ID: AN-02\_20211118\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 16:13  
 Analyst: SG  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.554	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.554	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.277	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.071	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.554	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.11	0.092	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.277	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.277	0.067	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.277	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.554	0.199	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.554	0.151	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.277	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.411		ng/g	0.277	0.144	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.277	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.554	0.318	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.331	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.554	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.554	0.169	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.554	0.108	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.554	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.554	0.226	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.554	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.1	4.22	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.11	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.77	0.133	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.77	0.189	1
PFAS, Total (6)	0.411		ng/g	0.277	0.046	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-24  
 Client ID: AN-02\_20211118\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 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)	50	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	63		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	52	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	55	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	58	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	56	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	4	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	2	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	58		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	27		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-24 RE  
 Client ID: AN-02\_20211118\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 16:14  
 Analyst: SG  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.15	0.867	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.16		ng/g	2.15	0.364	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	5	Q	31-134
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	5	Q	34-137



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-24 D  
 Client ID: AN-02\_20211118\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 17:42  
 Analyst: DV  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	640		ug/kg	81	17.	10
2-Chloronaphthalene	ND		ug/kg	81	10.	10
Fluoranthene	6200		ug/kg	81	5.7	10
Naphthalene	670		ug/kg	81	15.	10
Benzo(a)anthracene	3500		ug/kg	81	7.7	10
Benzo(a)pyrene	2500		ug/kg	81	9.8	10
Benzo(b)fluoranthene	2900		ug/kg	81	7.7	10
Benzo(k)fluoranthene	1100		ug/kg	81	7.3	10
Chrysene	2200		ug/kg	81	6.1	10
Acenaphthylene	200		ug/kg	81	10.	10
Anthracene	1600		ug/kg	81	6.5	10
Benzo(ghi)perylene	1400		ug/kg	81	6.9	10
Fluorene	940		ug/kg	81	9.8	10
Phenanthrene	5700		ug/kg	81	6.9	10
Dibenzo(a,h)anthracene	390		ug/kg	81	8.1	10
Indeno(1,2,3-cd)pyrene	1700		ug/kg	81	9.8	10
Pyrene	5000		ug/kg	81	5.7	10
1-Methylnaphthalene	200		ug/kg	81	13.	10
2-Methylnaphthalene	300		ug/kg	81	23.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-25  
 Client ID: AN-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 16:39  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.0	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.0	1.0	1
Fluoranthene	14		ug/kg	8.0	0.56	1
Naphthalene	ND		ug/kg	8.0	1.4	1
Benzo(a)anthracene	17		ug/kg	8.0	0.76	1
Benzo(a)pyrene	8.2		ug/kg	8.0	0.96	1
Benzo(b)fluoranthene	11		ug/kg	8.0	0.76	1
Benzo(k)fluoranthene	2.9	J	ug/kg	8.0	0.72	1
Chrysene	8.1		ug/kg	8.0	0.60	1
Acenaphthylene	5.1	J	ug/kg	8.0	1.0	1
Anthracene	2.3	J	ug/kg	8.0	0.64	1
Benzo(ghi)perylene	6.7	J	ug/kg	8.0	0.68	1
Fluorene	1.0	J	ug/kg	8.0	0.96	1
Phenanthrene	9.9		ug/kg	8.0	0.68	1
Dibenzo(a,h)anthracene	1.5	J	ug/kg	8.0	0.80	1
Indeno(1,2,3-cd)pyrene	7.3	J	ug/kg	8.0	0.96	1
Pyrene	17		ug/kg	8.0	0.56	1
1-Methylnaphthalene	ND		ug/kg	8.0	1.2	1
2-Methylnaphthalene	ND		ug/kg	8.0	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-25  
 Client ID: AN-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 16:30  
 Analyst: SG  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.122	J	ng/g	0.564	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.564	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.282	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.13	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.564	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.13	0.094	1
Perfluoroheptanoic Acid (PFHpA)	0.237	JF	ng/g	0.282	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.282	0.068	1
Perfluorooctanoic Acid (PFOA)	0.181	JF	ng/g	0.282	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.564	0.202	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.564	0.154	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.282	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	0.176	J	ng/g	0.282	0.146	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.282	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.564	0.324	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.13	0.337	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.564	0.227	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.564	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.564	0.172	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.564	0.110	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.564	0.095	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.564	0.079	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.564	0.230	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.564	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.3	4.30	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.13	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.82	0.135	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-25  
 Client ID: AN-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.82	0.193	1
PFAS, Total (6)	0.594	J	ng/g	0.282	0.047	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	53	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	135		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	53	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	53	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	58	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	164	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	308	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	15	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	13	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	55		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	29		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-26  
 Client ID: SO-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 16:55  
 Analyst: DV  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.4	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.4	1.1	1
Fluoranthene	4.8	J	ug/kg	8.4	0.58	1
Naphthalene	ND		ug/kg	8.4	1.5	1
Benzo(a)anthracene	4.0	J	ug/kg	8.4	0.79	1
Benzo(a)pyrene	2.4	J	ug/kg	8.4	1.0	1
Benzo(b)fluoranthene	3.6	J	ug/kg	8.4	0.79	1
Benzo(k)fluoranthene	1.2	J	ug/kg	8.4	0.75	1
Chrysene	2.5	J	ug/kg	8.4	0.63	1
Acenaphthylene	ND		ug/kg	8.4	1.0	1
Anthracene	ND		ug/kg	8.4	0.67	1
Benzo(ghi)perylene	1.8	J	ug/kg	8.4	0.71	1
Fluorene	ND		ug/kg	8.4	1.0	1
Phenanthrene	2.0	J	ug/kg	8.4	0.71	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.4	0.84	1
Indeno(1,2,3-cd)pyrene	2.2	J	ug/kg	8.4	1.0	1
Pyrene	4.2	J	ug/kg	8.4	0.58	1
1-Methylnaphthalene	ND		ug/kg	8.4	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.4	2.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-26  
 Client ID: SO-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 17:03  
 Analyst: SG  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.057	J	ng/g	0.596	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.596	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.298	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.596	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.100	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.298	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.298	0.072	1
Perfluorooctanoic Acid (PFOA)	0.083	JF	ng/g	0.298	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.596	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.596	0.163	1
Perfluorononanoic Acid (PFNA)	0.138	JF	ng/g	0.298	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.300		ng/g	0.298	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.298	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.596	0.342	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.356	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.596	0.240	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.596	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.596	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.596	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.596	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.596	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.596	0.244	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.596	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.9	4.54	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.19	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.98	0.143	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-26  
 Client ID: SO-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.98	0.204	1
PFAS, Total (6)	0.521	J	ng/g	0.298	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	131		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>69</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	131		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>71</b>	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>73</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	171		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>10</b>	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>24</b>	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	94		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	29		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-27  
 Client ID: SO-01\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 08:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 17:12  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.2	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.2	1.1	1
Fluoranthene	3.9	J	ug/kg	8.2	0.57	1
Naphthalene	ND		ug/kg	8.2	1.5	1
Benzo(a)anthracene	3.9	J	ug/kg	8.2	0.78	1
Benzo(a)pyrene	1.8	J	ug/kg	8.2	0.98	1
Benzo(b)fluoranthene	2.7	J	ug/kg	8.2	0.78	1
Benzo(k)fluoranthene	0.86	J	ug/kg	8.2	0.74	1
Chrysene	2.0	J	ug/kg	8.2	0.61	1
Acenaphthylene	ND		ug/kg	8.2	1.0	1
Anthracene	0.66	J	ug/kg	8.2	0.66	1
Benzo(ghi)perylene	1.4	J	ug/kg	8.2	0.70	1
Fluorene	ND		ug/kg	8.2	0.98	1
Phenanthrene	2.2	J	ug/kg	8.2	0.70	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.2	0.82	1
Indeno(1,2,3-cd)pyrene	1.5	J	ug/kg	8.2	0.98	1
Pyrene	3.5	J	ug/kg	8.2	0.57	1
1-Methylnaphthalene	ND		ug/kg	8.2	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.2	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	75		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-27  
 Client ID: SO-01\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 08:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 17:20  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.108	J	ng/g	0.577	0.026	1
Perfluoropentanoic Acid (PFPeA)	0.058	J	ng/g	0.577	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.288	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.15	0.074	1
Perfluorohexanoic Acid (PFHxA)	0.113	J	ng/g	0.577	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.15	0.096	1
Perfluoroheptanoic Acid (PFHpA)	0.159	J	ng/g	0.288	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.288	0.070	1
Perfluorooctanoic Acid (PFOA)	0.602	F	ng/g	0.288	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.577	0.207	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.577	0.158	1
Perfluorononanoic Acid (PFNA)	0.153	JF	ng/g	0.288	0.087	1
Perfluorooctanesulfonic Acid (PFOS)	0.381	F	ng/g	0.288	0.150	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.288	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.577	0.331	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.15	0.345	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.577	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.577	0.176	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.577	0.113	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.577	0.081	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.577	0.236	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.577	0.062	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.5	4.40	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.15	0.048	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.88	0.138	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.88	0.197	1
PFAS, Total (6)	1.30	J	ng/g	0.288	0.048	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-27  
 Client ID: SO-01\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 08:30  
 Date Received: 11/19/21  
 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)			40	Q		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			53	Q		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			61	Q		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			74			14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			44	Q		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			46	Q		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			62	Q		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)			44	Q		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			74			20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			49	Q		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			62	Q		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			47	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)			1	Q		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			47	Q		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			17			10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			4	Q		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			45	Q		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			39			24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)			49			10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)			20			10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-27 RE  
 Client ID: SO-01\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 08:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 16:31  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.46	0.990	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	2.46	0.415	1
<b>Surrogate (Extracted Internal Standard)</b>				<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)				2	Q	31-134
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)				2	Q	34-137

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-28  
 Client ID: PI-02\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 17:28  
 Analyst: DV  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	2.3	J	ug/kg	8.8	1.8	1
2-Chloronaphthalene	ND		ug/kg	8.8	1.1	1
Fluoranthene	200		ug/kg	8.8	0.62	1
Naphthalene	9.7		ug/kg	8.8	1.6	1
Benzo(a)anthracene	140		ug/kg	8.8	0.84	1
Benzo(a)pyrene	100		ug/kg	8.8	1.0	1
Benzo(b)fluoranthene	140		ug/kg	8.8	0.84	1
Benzo(k)fluoranthene	48		ug/kg	8.8	0.79	1
Chrysene	110		ug/kg	8.8	0.66	1
Acenaphthylene	40		ug/kg	8.8	1.1	1
Anthracene	18		ug/kg	8.8	0.70	1
Benzo(ghi)perylene	75		ug/kg	8.8	0.75	1
Fluorene	7.1	J	ug/kg	8.8	1.0	1
Phenanthrene	87		ug/kg	8.8	0.75	1
Dibenzo(a,h)anthracene	18		ug/kg	8.8	0.88	1
Indeno(1,2,3-cd)pyrene	84		ug/kg	8.8	1.0	1
Pyrene	200		ug/kg	8.8	0.62	1
1-Methylnaphthalene	4.8	J	ug/kg	8.8	1.4	1
2-Methylnaphthalene	8.0	J	ug/kg	8.8	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-28  
 Client ID: PI-02\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 17:36  
 Analyst: SG  
 Percent Solids: 76%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.099	J	ng/g	0.610	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.610	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.305	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.079	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.610	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	0.081	J	ng/g	0.305	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.305	0.074	1
Perfluorooctanoic Acid (PFOA)	0.177	JF	ng/g	0.305	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.610	0.219	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.610	0.166	1
Perfluorononanoic Acid (PFNA)	0.205	J	ng/g	0.305	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	0.592		ng/g	0.305	0.158	1
Perfluorodecanoic Acid (PFDA)	0.088	JF	ng/g	0.305	0.082	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.610	0.350	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.364	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.610	0.246	1
Perfluoroundecanoic Acid (PFUnA)	0.062	J	ng/g	0.610	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.610	0.186	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.610	0.119	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.610	0.103	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.610	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.610	0.249	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.610	0.066	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.2	4.64	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.22	0.050	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.05	0.146	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-28  
 Client ID: PI-02\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.05	0.208	1
PFAS, Total (6)	1.14	J	ng/g	0.305	0.051	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	144		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	133		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	180	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	114		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	29		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-29  
 Client ID: EB-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/01/21 17:14  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 11/22/21 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
1-Methylnaphthalene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	89		15-120
4-Terphenyl-d14	99		41-149

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-29  
 Client ID: EB-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/30/21 22:30  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.90	0.388	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.90	0.377	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.90	0.227	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.430	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.90	0.312	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.234	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.358	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.90	0.225	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.655	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.90	0.297	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.90	0.480	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.290	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.617	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.248	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.933	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.766	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.354	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.312	1
Perfluorotetradecanoic Acid (PFTA)	0.411	J	ng/l	1.90	0.236	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.6	21.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.320	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.81	1.18	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-29  
 Client ID: EB-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 12:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.81	1.09	1
PFAS, Total (6)	ND		ng/l	1.90	0.214	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>166</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>161</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>173</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>128</b>	Q	27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	53		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-30  
 Client ID: EB-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/01/21 17:33  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 11/22/21 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
1-Methylnaphthalene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	79		15-120
4-Terphenyl-d14	86		41-149

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-30  
 Client ID: EB-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/30/21 22:46  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.83	0.374	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.83	0.363	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	0.218	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	0.414	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.83	0.301	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	0.225	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.83	0.206	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	0.345	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.83	0.216	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	0.631	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.83	0.286	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.83	0.462	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	0.279	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	1.11	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.83	1.03	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	0.594	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	0.238	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	0.899	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	0.532	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	0.737	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	0.341	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	0.300	1
Perfluorotetradecanoic Acid (PFTA)	0.407	J	ng/l	1.83	0.227	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	45.8	20.8	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	0.308	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.67	1.14	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-30  
 Client ID: EB-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.67	1.05	1
PFAS, Total (6)	ND		ng/l	1.83	0.206	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>167</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>156</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>166</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	114		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	53		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	49		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-31  
 Client ID: FB-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/30/21 23:03  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.77	0.361	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.77	0.351	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.77	0.211	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	0.400	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.77	0.217	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.77	0.333	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.77	0.209	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.77	0.609	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.77	0.446	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.269	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.77	1.07	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.992	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.574	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.868	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.514	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.712	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.330	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.290	1
Perfluorotetradecanoic Acid (PFTA)	0.361	J	ng/l	1.77	0.220	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	44.3	20.1	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.77	0.298	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.54	1.10	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-31  
 Client ID: FB-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.54	1.02	1
PFAS, Total (6)	ND		ng/l	1.77	0.199	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>177</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>159</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	160		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	104		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	53		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-32  
**Client ID:** FB-03\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 15:40  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 11/30/21 23:19  
**Analyst:** HT

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.75	0.347	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.396	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.75	0.287	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.215	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.207	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.602	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.441	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.980	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.567	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.228	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.858	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.508	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.704	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.326	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	0.413	J	ng/l	1.75	0.217	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.8	19.9	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.75	0.294	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.50	1.08	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-32  
 Client ID: FB-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:40  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.50	1.00	1
PFAS, Total (6)	ND		ng/l	1.75	0.197	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>186</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>158</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>175</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	119		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	94		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-33  
**Client ID:** TB-01\_20211109  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/09/21 13:06  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 11/30/21 23:36  
**Analyst:** HT

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.74	0.356	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.600	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.977	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.565	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.855	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.506	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.701	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	0.405	J	ng/l	1.74	0.216	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.6	19.8	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.74	0.293	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.49	1.08	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-33  
 Client ID: TB-01\_20211109  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:06  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.49	1.00	1
PFAS, Total (6)	ND		ng/l	1.74	0.196	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>166</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>152</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>163</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	106		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	79		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	49		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-34  
 Client ID: TB-02\_20211109  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:06  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/30/21 23:52  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.73	0.353	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.73	0.342	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.73	0.206	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.73	0.391	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.73	0.284	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.73	0.212	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.73	0.195	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.73	0.325	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.73	0.204	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.73	1.15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.73	0.595	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.73	0.270	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.73	0.436	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.73	0.263	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.73	1.05	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.73	0.968	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.73	0.560	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.73	0.225	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.73	0.847	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.73	0.501	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.73	0.695	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.73	0.322	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.73	0.283	1
Perfluorotetradecanoic Acid (PFTA)	0.353	J	ng/l	1.73	0.214	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.2	19.6	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.73	0.290	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.46	1.07	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

Lab ID: L2164267-34  
 Client ID: TB-02\_20211109  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 13:06  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.46	0.992	1
PFAS, Total (6)	ND		ng/l	1.73	0.195	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>169</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>153</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	51		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	90		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	47		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/28/21 12:09  
Analyst: DV

Extraction Method: EPA 3510C  
Extraction Date: 11/22/21 17:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 29-30 Batch: WG1574678-1					
Acenaphthene	ND		ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	ND		ug/l	0.10	0.02
Naphthalene	ND		ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	ND		ug/l	0.10	0.01
Anthracene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.10	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
1-Methylnaphthalene	ND		ug/l	0.10	0.02
2-Methylnaphthalene	ND		ug/l	0.10	0.02

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	74		15-120
4-Terphenyl-d14	72		41-149



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/11/21 12:42  
Analyst: MP

Extraction Method: ALPHA 23528  
Extraction Date: 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-20 Batch: WG1574858-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 12/11/21 12:42  
**Analyst:** MP

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/23/21 11:03

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-20 Batch: WG1574858-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	66		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		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)	96		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	98		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	112		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	123		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	96		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 13:11  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 21-28 Batch: WG1575152-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 13:11  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 21-28 Batch: WG1575152-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		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)	148		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	192	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/30/21 11:37  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 21-28 Batch: WG1575152-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	122	Q	10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/27/21 15:29  
Analyst: RP

Extraction Method: EPA 3546  
Extraction Date: 11/25/21 02:00

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01,03-05 Batch: WG1575805-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	64		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/28/21 13:03  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02,06-12 Batch: WG1576177-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	78		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/30/21 15:52  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13-19 Batch: WG1576424-1					
Acenaphthene	ND		ug/kg	6.5	1.4
2-Chloronaphthalene	ND		ug/kg	6.5	0.84
Fluoranthene	ND		ug/kg	6.5	0.46
Naphthalene	ND		ug/kg	6.5	1.2
Benzo(a)anthracene	ND		ug/kg	6.5	0.62
Benzo(a)pyrene	ND		ug/kg	6.5	0.78
Benzo(b)fluoranthene	ND		ug/kg	6.5	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.5	0.58
Chrysene	ND		ug/kg	6.5	0.49
Acenaphthylene	ND		ug/kg	6.5	0.81
Anthracene	ND		ug/kg	6.5	0.52
Benzo(ghi)perylene	ND		ug/kg	6.5	0.55
Fluorene	ND		ug/kg	6.5	0.78
Phenanthrene	ND		ug/kg	6.5	0.55
Dibenzo(a,h)anthracene	ND		ug/kg	6.5	0.65
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.5	0.78
Pyrene	ND		ug/kg	6.5	0.46
1-Methylnaphthalene	ND		ug/kg	6.5	1.0
2-Methylnaphthalene	ND		ug/kg	6.5	1.8

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/04/21 14:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 23-24,27 Batch: WG1576515-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	0.072	J	ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/04/21 14:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 23-24,27 Batch: WG1576515-1					
Perfluorohexadecanoic Acid (PFHxDA)	0.126	J	ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		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)	151		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>158</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	164		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	102		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	120		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	37		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/30/21 21:56  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 29-34 Batch: WG1576595-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTa)	0.468	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/30/21 21:56  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 29-34 Batch: WG1576595-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>175</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>152</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>164</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	109		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	47		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/02/21 12:22  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 12:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 29-34 Batch: WG1576595-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	58		10-112

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/30/21 15:52  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-22 Batch: WG1576793-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	0.52	J	ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	1.2	J	ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	0.85	J	ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	0.49	J	ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	0.56	J	ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	0.46	J	ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	98		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 12/02/21 16:06  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 23-28 Batch: WG1577948-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.86
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.63
Benzo(a)pyrene	ND		ug/kg	6.6	0.80
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.63
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.60
Chrysene	ND		ug/kg	6.6	0.50
Acenaphthylene	ND		ug/kg	6.6	0.83
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.80
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.80
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	106		18-120



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 29-30 Batch: WG1574678-2 WG1574678-3								
Acenaphthene	73		86		40-140	16		40
2-Chloronaphthalene	74		86		40-140	15		40
Fluoranthene	76		90		40-140	17		40
Naphthalene	75		85		40-140	13		40
Benzo(a)anthracene	73		86		40-140	16		40
Benzo(a)pyrene	76		91		40-140	18		40
Benzo(b)fluoranthene	70		86		40-140	21		40
Benzo(k)fluoranthene	75		87		40-140	15		40
Chrysene	75		89		40-140	17		40
Acenaphthylene	76		86		40-140	12		40
Anthracene	81		95		40-140	16		40
Benzo(ghi)perylene	82		98		40-140	18		40
Fluorene	72		84		40-140	15		40
Phenanthrene	70		84		40-140	18		40
Dibenzo(a,h)anthracene	81		97		40-140	18		40
Indeno(1,2,3-cd)pyrene	76		92		40-140	19		40
Pyrene	76		90		40-140	17		40
1-Methylnaphthalene	76		86		40-140	12		40
2-Methylnaphthalene	75		86		40-140	14		40

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 29-30 Batch: WG1574678-2 WG1574678-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	82		90		23-120
2-Fluorobiphenyl	76		86		15-120
4-Terphenyl-d14	75		88		41-149

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
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Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 Batch: WG1574858-2								
Perfluorobutanoic Acid (PFBA)	90		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	88		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	94		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	93		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	106		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	94		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	90		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	88		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	109		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	96		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	106		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	92		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	98		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	102		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	96		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	96		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

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<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 Batch: WG1574858-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	96		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	87		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	91		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	89		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	20		-		10-123	-		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2164267

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Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 Batch: WG1574858-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				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)	83				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	123				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	94				10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

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Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 Batch: WG1575152-2								
Perfluorobutanoic Acid (PFBA)	93		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	89		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	93		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	98		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	96		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	95		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	75		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	104		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	87		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	114		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	94		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 Batch: WG1575152-2								
Perfluorotridecanoic Acid (PFTrDA)	105		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	87		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	69		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	94		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	86		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	22		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2164267

Project Number: 5060.00

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Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 Batch: WG1575152-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	157				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	154				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>207</b>	Q			19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	83				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	124				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	49				10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

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<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 Batch: WG1575152-2								
Perfluorooctanesulfonamide (FOSA)	107		-		67-137	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	118	Q			10-117

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03-05 Batch: WG1575805-2 WG1575805-3								
Acenaphthene	68		78		40-140	14		50
2-Chloronaphthalene	67		78		40-140	15		50
Fluoranthene	75		85		40-140	13		50
Naphthalene	64		76		40-140	17		50
Benzo(a)anthracene	78		90		40-140	14		50
Benzo(a)pyrene	77		89		40-140	14		50
Benzo(b)fluoranthene	72		87		40-140	19		50
Benzo(k)fluoranthene	76		84		40-140	10		50
Chrysene	64		72		40-140	12		50
Acenaphthylene	73		83		40-140	13		50
Anthracene	71		81		40-140	13		50
Benzo(ghi)perylene	75		87		40-140	15		50
Fluorene	71		81		40-140	13		50
Phenanthrene	68		76		40-140	11		50
Dibenzo(a,h)anthracene	82		95		40-140	15		50
Indeno(1,2,3-cd)pyrene	77		91		40-140	17		50
Pyrene	76		86		35-142	12		50
1-Methylnaphthalene	68		79		40-140	15		50
2-Methylnaphthalene	65		77		40-140	17		50

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03-05 Batch: WG1575805-2 WG1575805-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	69		86		23-120
2-Fluorobiphenyl	60		72		30-120
4-Terphenyl-d14	68		80		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02,06-12 Batch: WG1576177-2 WG1576177-3								
Acenaphthene	65		74		40-140	13		50
2-Chloronaphthalene	66		74		40-140	11		50
Fluoranthene	74		83		40-140	11		50
Naphthalene	64		72		40-140	12		50
Benzo(a)anthracene	69		76		40-140	10		50
Benzo(a)pyrene	71		80		40-140	12		50
Benzo(b)fluoranthene	66		74		40-140	11		50
Benzo(k)fluoranthene	69		70		40-140	1		50
Chrysene	63		71		40-140	12		50
Acenaphthylene	70		79		40-140	12		50
Anthracene	70		78		40-140	11		50
Benzo(ghi)perylene	70		78		40-140	11		50
Fluorene	67		76		40-140	13		50
Phenanthrene	65		73		40-140	12		50
Dibenzo(a,h)anthracene	76		85		40-140	11		50
Indeno(1,2,3-cd)pyrene	73		81		40-140	10		50
Pyrene	73		83		35-142	13		50
1-Methylnaphthalene	68		75		40-140	10		50
2-Methylnaphthalene	64		73		40-140	13		50



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02,06-12 Batch: WG1576177-2 WG1576177-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	67		75		23-120
2-Fluorobiphenyl	63		70		30-120
4-Terphenyl-d14	67		76		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13-19 Batch: WG1576424-2 WG1576424-3								
Acenaphthene	82		89		40-140	8		50
2-Chloronaphthalene	84		87		40-140	4		50
Fluoranthene	93		103		40-140	10		50
Naphthalene	80		84		40-140	5		50
Benzo(a)anthracene	85		94		40-140	10		50
Benzo(a)pyrene	91		98		40-140	7		50
Benzo(b)fluoranthene	84		99		40-140	16		50
Benzo(k)fluoranthene	94		90		40-140	4		50
Chrysene	81		84		40-140	4		50
Acenaphthylene	91		96		40-140	5		50
Anthracene	88		94		40-140	7		50
Benzo(ghi)perylene	90		98		40-140	9		50
Fluorene	87		93		40-140	7		50
Phenanthrene	82		88		40-140	7		50
Dibenzo(a,h)anthracene	98		107		40-140	9		50
Indeno(1,2,3-cd)pyrene	95		99		40-140	4		50
Pyrene	92		101		35-142	9		50
1-Methylnaphthalene	85		88		40-140	3		50
2-Methylnaphthalene	82		85		40-140	4		50

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13-19 Batch: WG1576424-2 WG1576424-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	89		90		23-120
2-Fluorobiphenyl	83		85		30-120
4-Terphenyl-d14	88		93		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 Batch: WG1576515-2								
Perfluorobutanoic Acid (PFBA)	98		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	100		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	103		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	98		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	105		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	99		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	115		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	93		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	103		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	98		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	114		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	95		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 Batch: WG1576515-2								
Perfluorotridecanoic Acid (PFTrDA)	124		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	107		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	106		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	101		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	99		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	29		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2164267

Project Number: 5060.00

Report Date: 01/03/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 Batch: WG1576515-2

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	150				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	89				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44				10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 Batch: WG1576595-2								
Perfluorobutanoic Acid (PFBA)	99		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	98		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	97		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	107		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	101		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	100		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	106		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	126		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	96		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	95		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	108		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	98		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	97		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	107		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	94		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	92		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	113		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	99		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 Batch: WG1576595-2								
Perfluorotridecanoic Acid (PFTrDA)	132		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	93		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	107		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	106		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	72		-		10-119	-		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2164267

Project Number: 5060.00

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Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 Batch: WG1576595-2								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	179	Q			12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	152	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	159				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	109				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	93				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	54				10-206

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 Batch: WG1576595-2								
Perfluorooctanesulfonamide (FOSA)	113		-		46-170	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61				10-112

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-22 Batch: WG1576793-2 WG1576793-3								
Acenaphthene	90		94		40-140	4		50
2-Chloronaphthalene	90		94		40-140	4		50
Fluoranthene	96		98		40-140	2		50
Naphthalene	87		129		40-140	39		50
Benzo(a)anthracene	108		115		40-140	6		50
Benzo(a)pyrene	105		110		40-140	5		50
Benzo(b)fluoranthene	101		107		40-140	6		50
Benzo(k)fluoranthene	94		98		40-140	4		50
Chrysene	85		88		40-140	3		50
Acenaphthylene	97		101		40-140	4		50
Anthracene	94		99		40-140	5		50
Benzo(ghi)perylene	101		105		40-140	4		50
Fluorene	93		98		40-140	5		50
Phenanthrene	88		93		40-140	6		50
Dibenzo(a,h)anthracene	112		118		40-140	5		50
Indeno(1,2,3-cd)pyrene	112		115		40-140	3		50
Pyrene	95		98		35-142	3		50
1-Methylnaphthalene	91		122		40-140	29		50
2-Methylnaphthalene	89		156	Q	40-140	55	Q	50

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-22 Batch: WG1576793-2 WG1576793-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	104		106		23-120
2-Fluorobiphenyl	85		87		30-120
4-Terphenyl-d14	88		90		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

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<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 23-28 Batch: WG1577948-2 WG1577948-3								
Acenaphthene	107		102		40-140	5		50
2-Chloronaphthalene	106		100		40-140	6		50
Fluoranthene	121		115		40-140	5		50
Naphthalene	102		97		40-140	5		50
Benzo(a)anthracene	131		120		40-140	9		50
Benzo(a)pyrene	126		119		40-140	6		50
Benzo(b)fluoranthene	124		116		40-140	7		50
Benzo(k)fluoranthene	110		108		40-140	2		50
Chrysene	101		96		40-140	5		50
Acenaphthylene	115		108		40-140	6		50
Anthracene	116		109		40-140	6		50
Benzo(ghi)perylene	122		116		40-140	5		50
Fluorene	112		106		40-140	6		50
Phenanthrene	108		103		40-140	5		50
Dibenzo(a,h)anthracene	136		130		40-140	5		50
Indeno(1,2,3-cd)pyrene	134		129		40-140	4		50
Pyrene	122		115		35-142	6		50
1-Methylnaphthalene	107		102		40-140	5		50
2-Methylnaphthalene	104		99		40-140	5		50

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 23-28 Batch: WG1577948-2 WG1577948-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	117		111		23-120
2-Fluorobiphenyl	116		92		30-120
4-Terphenyl-d14	112		105		18-120

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-3 QC Sample: L2164267-01 Client ID: CU-01_20211115												
Perfluorobutanoic Acid (PFBA)	ND	4.98	4.54	91		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	4.98	4.47	90		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.42	4.07	92		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	4.66	4.51	97		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	4.98	4.69	94		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	4.68	4.26	91		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	4.98	4.66	94		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	4.55	4.72	104		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	4.98	4.68	94		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	4.74	4.78	101		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	4.74	4.82	102		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	4.98	4.46	90		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	4.62	5.22	113		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	4.98	4.79	96		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	4.78	4.56	95		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	4.79	5.18	108		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	4.98	4.72	95		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	4.98	5.07	102		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	4.8	5.18	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	4.98	5.10	102		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	4.98	4.13	83		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	4.98	4.79	96		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-3 QC Sample: L2164267-01 Client ID: CU-01_20211115												
Perfluorotridecanoic Acid (PFTTrDA)	ND	4.98	5.65	113		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	4.98	4.88	98		-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	48.6	45.8	94		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	4.7	3.80	81		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	4.98	3.94	79		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	4.98	1.62J	33		-	-		10-123	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67				20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	27	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	19	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	89				10-145



**Matrix Spike Analysis****Batch Quality Control****Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164267**Project Number:** 5060.00**Report Date:** 01/03/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-3 QC Sample: L2164267-01 Client ID: CU-01_20211115												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS</b>		<b>MSD</b>		<b>Acceptance Criteria</b>
	<b>% Recovery</b>	<b>Qualifier</b>	<b>% Recovery</b>	<b>Qualifier</b>	
Perfluoro[13C4]Butanoic Acid (MPFBA)	63				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75				75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75				74-139

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: AN-04_20211118												
Perfluorobutanoic Acid (PFBA)	0.327J	8.28	7.88	91		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.159J	8.28	7.61	90		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	7.35	6.36	87		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	7.74	7.20	93		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.183J	8.28	7.57	89		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	7.78	6.53	84		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.246J	8.28	8.24	97		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	7.56	7.22	96		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.594F	8.28	8.03	90		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	7.88	8.02	102		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	7.88	6.77	86		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.246J	8.28	8.35	98		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.792	7.68	8.21	97		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	8.28	8.62	104		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	7.94	6.61	83		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	7.96	7.42	93		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	8.28	7.00	85		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	8.28	8.05	97		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	7.98	8.62	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	8.28	6.93F	84		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	8.28	14.3F	173	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	8.28	7.86	95		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: AN-04_20211118												
Perfluorotridecanoic Acid (PFTTrDA)	ND	8.28	8.80	106		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	8.28	7.04	85		-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	80.7	84.5F	105		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	7.81	5.85	75		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	8.28	6.80	82		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	8.28	1.98J	24		-	-		10-123	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	142				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130				20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	43				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	19	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	34				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	52	Q			75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	43	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	45	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	20				10-145

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: AN-04_20211118												

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
Perfluoro[13C4]Butanoic Acid (MPFBA)	45	Q			61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	56	Q			58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	49	Q			75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	51	Q			72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				74-139

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID:												
MS Sample												
Perfluorobutanoic Acid (PFBA)	0.626	5.69	6.24	99		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	1.29	5.69	7.03	101		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	5.05	4.75	94		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.32	5.75	108		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.35	5.69	6.81	96		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.35	5.65	106		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	3.18	5.69	8.87	100		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.2	5.61	108		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	17.0	5.69	23.4	113		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.46	5.41	7.52	112		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.362J	5.41	8.91	158	Q	-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	7.39	5.69	13.2	102		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	295E	5.28	312E	322	Q	-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	59.9	5.69	65.6	100		-	-		69-133	-		30
Perfluorononanesulfonic Acid (PFNS)	0.493J	5.47	9.64	167	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.38	5.69	7.45	107		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	29.5	5.69	35.6	107		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.30	5.48	9.98	158	Q	-	-		59-134	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	705E	5.69	738E	580	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	75.3	5.69	80.4	90		-	-		69-135	-		30
Perfluorotridecanoic Acid (PFTrDA)	24.6	5.69	37.4	225	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	33.7	5.69	40.8	125		-	-		69-133	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID:												
MS Sample												
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	55.4	59.8	108		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	5.37	5.68	106		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	10.6	5.69	17.0	113		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	1.41J	5.69	4.69F	58		-	-		10-123	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	247	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	258	Q			20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67				34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	161	Q			78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	34				10-145
Perfluoro[13C4]Butanoic Acid (MPFBA)	77				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79				58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				75-130

**Matrix Spike Analysis****Batch Quality Control****Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164267**Project Number:** 5060.00**Report Date:** 01/03/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID: MS Sample												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>MS Qualifier</b>	<b>MSD % Recovery</b>	<b>MSD Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	159	Q			74-139

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-3 QC Sample: L2164956-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	38.4	38.9	101		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	38.4	39.9	104		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	34.1	34.4	101		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.9	36.4	101		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	38.4	38.6	101		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36.1	38.4	106		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	38.4	38.7	101		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	35.1	38.5	110		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	38.4	39.9	104		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.5	42.6	117		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.5	35.4	97		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	38.4	37.1	97		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	35.6	38.0	107		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	38.4	38.9	101		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.8	41.7	113		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.9	37.2	101		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.4	41.6	108		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.4	37.0	96		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37	35.6	96		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.4	34.6F	90		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.4	39.0	102		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.4	38.6	101		-	-		67-153	-		30



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-3 QC Sample: L2164956-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	38.4	53.5	139		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.369J	38.4	41.7	108		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	374	367	98		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.2	37.3	103		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.4	42.9	112		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.4	37.5	98		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	154				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>158</b>	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>153</b>	Q			14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	57				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	69				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>61</b>	Q			62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	<b>59</b>	Q			60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44				10-206

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164267

**Project Number:** 5060.00

**Report Date:** 01/03/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-3 QC Sample: L2164956-01 Client ID: MS Sample												

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
Perfluoro[13C4]Butanoic Acid (MPFBA)	56	Q			58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5	Q			10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	58	Q			62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				70-131

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164267

Report Date: 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-4 QC Sample: L2164267-02 Client ID: CU-04_20211115						
Perfluorobutanoic Acid (PFBA)	0.029J	0.026J	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)	ND	ND	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-4 QC Sample: L2164267-02 Client ID: CU-04_20211115						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		88		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		93		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		85		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		66		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		79		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		85		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		80		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		90		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		103		19-175

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164267

Report Date: 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1574858-4 QC Sample: L2164267-02 Client ID: CU-04_20211115						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		66		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		100		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		43		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		82		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		108		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		103		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	114		109		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	88		91		10-145

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164267

Report Date: 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: AN-03_20211118						
Perfluorobutanoic Acid (PFBA)	0.293J	0.264J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.298J	0.234J	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)	0.276JF	0.253JF	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)	1.68F	1.77	ng/g	5		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)	0.907J	0.795JF	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.14F	2.77F	ng/g	13		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)	ND	ND	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: AN-03_20211118						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		64		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		61		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		88		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	456	Q	427	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	56	Q	42	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	54	Q	37	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	53	Q	33	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	540	Q	513	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	48	Q	33	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		101		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	47	Q	30	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	920	Q	812	Q	19-175

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164267

Report Date: 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 21-28 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: AN-03_20211118						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		61		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	57	Q	39	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		5	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		78		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		41	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		48		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		43		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	39		32		10-145



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-4 QC Sample: L2163946-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.295J	0.327J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.622J	0.656J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.079J	0.103J	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.674J	0.708	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.663	0.699	ng/g	5		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	2.05	2.23	ng/g	8		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)	1.32	1.42	ng/g	7		30
Perfluorooctanesulfonic Acid (PFOS)	1.38	1.43	ng/g	4		30
Perfluorodecanoic Acid (PFDA)	1.85	2.07	ng/g	11		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)	0.657J	0.745	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-4 QC Sample: L2163946-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.77	1.25F	ng/g	34	Q	30
Perfluorododecanoic Acid (PFDoA)	0.576J	0.632JF	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.293J	0.284J	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	0.248J	0.204JF	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		81		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		80		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		93		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	145		172	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		81		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		86		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		94		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		158	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		92		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129		165		19-175

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24,27 QC Batch ID: WG1576515-4 QC Sample: L2163946-02						
Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		67		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		82		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		63		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		57		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	35		31		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		84		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	22		17		10-145

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-4 QC Sample: L2164956-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.605J	0.771J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	0.550J	0.496J	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-4 QC Sample: L2164956-02 Client ID: DUP Sample						
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.442J	0.399JF	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	13	Q	18	Q	58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	19	Q	23	Q	62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		92		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	145	Q	131		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	18	Q	22	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	21	Q	24	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		89		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	24	Q	26	Q	62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	146		128		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	30	Q	31	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		87		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	30	Q	30	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155		130		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29		29		24-116

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164267

Report Date: 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 29-34 QC Batch ID: WG1576595-4 QC Sample: L2164956-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	36	Q	35	Q	55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	36		33		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	33	Q	31	Q	48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		34		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	21		29		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	40		35		10-206

# **INORGANICS & MISCELLANEOUS**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-01  
**Client ID:** CU-01\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 11:55  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.217		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	0.205		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	0.211		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.9		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-02  
**Client ID:** CU-04\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 13:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.814		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	0.707		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	0.760		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.4		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-03  
**Client ID:** OX-02\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 15:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.89		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.92		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.91		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.0		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-04  
**Client ID:** OX-02\_20211115 DUP  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 15:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.88		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.79		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.84		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-05  
**Client ID:** OX-01\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 16:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.23		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.31		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.27		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.6		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-06  
**Client ID:** OX-04\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 09:15  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.44		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.91		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.68		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-07  
**Client ID:** OX-03\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 10:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.62		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.41		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.51		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	65.4		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-08  
**Client ID:** FR-03\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 11:50  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	7.28		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	8.06		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	7.67		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	70.3		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-09  
**Client ID:** FR-04\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 12:55  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.67		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.31		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.49		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.0		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-10  
**Client ID:** FR-04\_20211116-DUP  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 12:55  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.05		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.98		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.01		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.6		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-11  
**Client ID:** FR-02\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 14:25  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	4.01		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	3.88		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	3.95		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-12  
**Client ID:** FR-01\_20211116  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/16/21 15:10  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.91		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.24		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.08		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-13  
**Client ID:** WL-04\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 08:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.95		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.81		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.88		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.6		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-14  
**Client ID:** KE-04\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 09:10  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.19		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.22		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.20		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.4		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-15  
**Client ID:** KE-02\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 10:05  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.37		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.48		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.43		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	67.7		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-16  
**Client ID:** KE-01\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 11:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	4.38		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	3.61		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	4.00		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.3		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-17  
**Client ID:** KE-03\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 12:05  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.89		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.98		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.93		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-18  
**Client ID:** SA-04\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 13:15  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.36		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.84		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.60		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-19  
**Client ID:** LI-02\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 15:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.64		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.76		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.70		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.0		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-20  
**Client ID:** SA-02\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 08:15  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.71		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	2.68		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	2.70		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.4		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-21  
**Client ID:** AN-04\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 09:30  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	5.55		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	6.57		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	6.06		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	57.0		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-22  
**Client ID:** AN-03\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 10:35  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	58.1		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	62.0		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	60.1		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	24.4		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-23  
**Client ID:** AN-02\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 11:45  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.55		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.47		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.51		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.1		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-24  
**Client ID:** AN-02\_20211118\_DUP  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 11:45  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.35		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.33		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.34		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-25  
**Client ID:** AN-01\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 13:15  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.72		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.46		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.59		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-26  
**Client ID:** SO-02\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 15:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.52		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	1.60		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	1.56		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.7		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

### SAMPLE RESULTS

**Lab ID:** L2164267-27  
**Client ID:** SO-01\_20211119  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/19/21 08:30  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.00		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	0.944		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	0.973		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.6		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**SAMPLE RESULTS**

**Lab ID:** L2164267-28  
**Client ID:** PI-02\_20211119  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/19/21 10:05  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.53		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	3.40		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	3.46		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.6		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab for sample(s): 01-20 Batch: WG1574889-2</b>										
Solids, Total	100		%	0.100	NA	1	-	11/23/21 11:24	121,2540G	RI
<b>General Chemistry - Westborough Lab for sample(s): 21-28 Batch: WG1574891-2</b>										
Solids, Total	99.9		%	0.100	NA	1	-	11/23/21 11:40	121,2540G	RI
<b>Total Organic Carbon - Mansfield Lab for sample(s): 01-15 Batch: WG1576674-1</b>										
Total Organic Carbon (Rep1)	ND		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	ND		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	ND		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>Total Organic Carbon - Mansfield Lab for sample(s): 16-28 Batch: WG1577222-1</b>										
Total Organic Carbon (Rep1)	ND		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	ND		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	ND		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-15 Batch: WG1576674-2								
Total Organic Carbon (Rep1)	108		-		75-125	-		25
Total Organic Carbon (Rep2)	106		-		75-125	-		25
Total Organic Carbon (Average)	107		-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 16-28 Batch: WG1577222-2								
Total Organic Carbon (Rep1)	102		-		75-125	-		25
Total Organic Carbon (Rep2)	109		-		75-125	-		25
Total Organic Carbon (Average)	105		-		75-125	-		25

### Matrix Spike Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-15    QC Batch ID: WG1576674-4    QC Sample: L2164267-06    Client ID: OX-04_20211116												
Total Organic Carbon (Rep1)	1.44	1.08	2.74	121		-	-		75-125	-		25
Total Organic Carbon (Rep2)	1.91	1.18	2.63	61	Q	-	-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 16-28    QC Batch ID: WG1577222-4    QC Sample: L2164267-28    Client ID: PI-02_20211119												
Total Organic Carbon (Rep1)	3.53	0.96	3.95	44	Q	-	-		75-125	-		25
Total Organic Carbon (Rep2)	3.40	1.14	4.77	120		-	-		75-125	-		25

## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164267

**Report Date:** 01/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
<b>General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1574889-1 QC Sample: L2164267-01 Client ID: CU-01_20211115</b>						
Solids, Total	91.9	91.3	%	1		20
<b>General Chemistry - Westborough Lab Associated sample(s): 21-28 QC Batch ID: WG1574891-1 QC Sample: L2163700-01 Client ID: DUP Sample</b>						
Solids, Total	91.0	91.4	%	0		20
<b>Total Organic Carbon - Mansfield Lab Associated sample(s): 01-15 QC Batch ID: WG1576674-3 QC Sample: L2164267-06 Client ID: OX-04_20211116</b>						
Total Organic Carbon (Rep1)	1.44	1.41	%	2		25
Total Organic Carbon (Rep2)	1.91	1.36	%	34	Q	25
Total Organic Carbon (Average)	1.68	1.39	%	19		25
<b>Total Organic Carbon - Mansfield Lab Associated sample(s): 16-28 QC Batch ID: WG1577222-3 QC Sample: L2164267-28 Client ID: PI-02_20211119</b>						
Total Organic Carbon (Rep1)	3.53	3.26	%	8		25
Total Organic Carbon (Rep2)	3.40	3.12	%	9		25
Total Organic Carbon (Average)	3.46	3.19	%	8		25

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164267**Project Number:** 5060.00**Report Date:** 01/03/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164267-01A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-01B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-01C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-01D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-02A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-02B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-02C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-02D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-03A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-03B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-03C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-03D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-04A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-04B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-04C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-04D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-05A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-05B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-05C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-05D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-06A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-06B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)



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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164267-06C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-06D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-07A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-07B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-07C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-07D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-08A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-08B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-08C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-08D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-09A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-09B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-09C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-09D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-10A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-10B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-10C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-10D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-11A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-11B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-11C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-11D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-12A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-12B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-12C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-12D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-13A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-13B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)

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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164267-13C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-13D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-14A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-14B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-14C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-14D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-15A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-15B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-15C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-15D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-16A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-16B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-16C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-16D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-17A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-17B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-17C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-17D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-18A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-18B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-18C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-18D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-19A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-19B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-19C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-19D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-20A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-20B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)

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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164267-20C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-20D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-21A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-21B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-21C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-21D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-22A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-22B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-22C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-22D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-23A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-23B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-23C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-23D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-24A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-24B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-24C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-24D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-25A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-25B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-25C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-25D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-26A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-26B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-26C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-26D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-27A	Plastic 2oz unpreserved for TS	A	NA		4.3	Y	Absent		ME-TS-2540(7)
L2164267-27B	Glass 60ml unpreserved split	A	NA		4.3	Y	Absent		A2-TOC-LK-2REPS(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164267-27C	Plastic 8oz unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-27D	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		PAHTCL-SIM(14)
L2164267-28A	Plastic 2oz unpreserved for TS	B	NA		2.8	Y	Absent		ME-TS-2540(7)
L2164267-28B	Glass 60ml unpreserved split	B	NA		2.8	Y	Absent		A2-TOC-LK-2REPS(14)
L2164267-28C	Plastic 8oz unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-28D	Glass 250ml/8oz unpreserved	B	NA		2.8	Y	Absent		PAHTCL-SIM(14)
L2164267-29A	Plastic 250ml unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-29B	Plastic 250ml unpreserved	A	NA		4.3	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-29C	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PAHTCL-SIM-LVI(7)
L2164267-29D	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PAHTCL-SIM-LVI(7)
L2164267-30A	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-30B	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-30C	Amber 250ml unpreserved	B	7	7	2.8	Y	Absent		PAHTCL-SIM-LVI(7)
L2164267-30D	Amber 250ml unpreserved	B	7	7	2.8	Y	Absent		PAHTCL-SIM-LVI(7)
L2164267-31A	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-32A	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-33A	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164267-34A	Plastic 250ml unpreserved	B	NA		2.8	Y	Absent		A2-ME-537ISOTOPE-28+(14)

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### PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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

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## 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

#### 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

**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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164267  
**Report Date:** 01/03/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 13 Determination of Total Organic Carbon in Sediment. U.S. EPA, Region II. July 27, 1988.
- 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.



## Certification Information

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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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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

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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, **LCHAT 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**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

1 of 4  
PAGE 1 OF 1



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-8300  
FAX: 508-822-3288

### Client Information

Client: Sanborn, Head & Associates for SOM  
Address: 20 Foundry Street  
Concord, NH 03301  
Phone: 603-229-1900  
Fax: 603-229-1919  
Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

### Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 11/19/21

ALPHA Job #: REM02 02164267

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client info PO #: REM02

### Regulatory Requirements/Report Limits

State/Fed Program Criteria

### ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids															
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SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
64267-01	CU-01-2021115	11/15/21	1155	S	MF
-02	CU-04-2021115	11/15/21	1320	S	MF
-03	OX-02-2021115	11/15/21	1500	S	MF
-04	OX-02-2021115-Dup	11/15/21	1500	S	MF
-05	OX-01-2021115	11/15/21	1600	S	MF
-06	OX-04-2021116	11/16/21	915	S	MF
-07	OX-03-2021116	11/16/21	1020	S	MF
-08	FR-03-2021116	11/16/21	1150	S	MF
-09	FR-04-2021116	11/16/21	1255	S	MF
-10	FR-04-2021116-Dup	11/16/21	1255	S	MF

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Michael Teerth</i>	11/19/21 1520	<i>Chris Hill</i>	11/19/21 1520
<i>Chris Hill</i>	11/19/21	<i>Chris Hill</i>	11/19/21 1520
<i>Chris Hill</i>	11/19/21 2100	<i>Chris Hill</i>	11/19/21 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO. 01-000-101 Rev. 5-10-12

# CHAIN OF CUSTODY

PAGE 1 OF 4 *2 of 4*



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM  
 Address: 20 Foundry Street  
 Concord, NH 03301  
 Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:                      Time:

Date Rec'd in Lab: *11/19/21*

ALPHA Job #: REM02 *12164267*

## Report Information Data Deliverables

FAX                       EMAIL  
 ADEx                       Add'l Deliverables

## Billing Information

Same as Client info    PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program                      Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids															
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<i>64267-01-11</i>	<i>FR-02-20211116</i>	<i>11/16/21</i>	<i>1425</i>	<i>S</i>	<i>MF</i>
<i>02-12</i>	<i>FR-01-20211116</i>	<i>11/16/21</i>	<i>1510</i>	<i>S</i>	<i>MF</i>
<i>03-13</i>	<i>NL-04-20211117</i>	<i>11/17/21</i>	<i>800</i>	<i>S</i>	<i>MF</i>
<i>-14</i>	<i>KE-04-20211117</i>	<i>11/17/21</i>	<i>910</i>	<i>S</i>	<i>MF</i>
<i>-15</i>	<i>KE-02-20211117</i>	<i>11/17/21</i>	<i>1005</i>	<i>S</i>	<i>MF</i>
<i>-16</i>	<i>KE-01-20211117</i>	<i>11/17/21</i>	<i>1120</i>	<i>S</i>	<i>MF</i>
<i>-17</i>	<i>KE-03-20211117</i>	<i>11/17/21</i>	<i>1205</i>	<i>S</i>	<i>MF</i>
<i>-18</i>	<i>SA-04-20211117</i>	<i>11/17/21</i>	<i>1315</i>	<i>S</i>	<i>MF</i>
<i>-19</i>	<i>LI-02-20211117</i>	<i>11/17/21</i>	<i>1500</i>	<i>S</i>	<i>MF</i>
<i>-20</i>	<i>SA-02-20211118</i>	<i>11/18/21</i>	<i>815</i>	<i>S</i>	<i>MF</i>

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Richard T. Smith</i>	<i>11/19/21 1520</i>	<i>[Signature]</i>	<i>11/19/21 1520</i>
<i>[Signature]</i>	<i>11/19/21</i>	<i>[Signature]</i>	<i>11/19/21 1833</i>
<i>[Signature]</i>	<i>11/19/21 2100</i>	<i>[Signature]</i>	<i>11/19/21 2100</i>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

FORM NO. D1-0105 (01)  
REV. 01-2014 (12)

# CHAIN OF CUSTODY

PAGE 3 of 4



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab: 11/19/21

ALPHA Job #: REM02 62164267

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO # REM02

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids															
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
62164267	AN-04-20211118	11/18/21	930	S	MF
-22	AN-03-20211118	11/18/21	1035	S	MF
-23	AN-02-20211118	11/18/21	1145	S	MF
-24	AN-02-20211118-Dup	11/18/21	1145	S	MF
-25	AN-01-20211118	11/18/21	1315	S	MF
-26	SD-02-20211118	11/18/21	1520	S	MF
-27	SD-01-20211118	11/19/21	830	S	MF
-28	PI-02-20211119	11/19/21	1005	S	MF
-29	EB-02-20211117	11/17/21	1230	AQ	MF
-30	EB-02-20211119	11/19/21	1020	AQ	MF

3

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Michael Smith</i>	11/19/21 1520	<i>[Signature]</i>	11/19/21 1520
<i>[Signature]</i>	11/19/21	<i>[Signature]</i>	11/19/21 1830
<i>[Signature]</i>	11/19/21	<i>[Signature]</i>	11/19/21 2000

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# CHAIN OF CUSTODY

PAGE *4 of 4*



Westborough, MA    Mansfield, MA  
 TEL: 508-896-9220    TEL: 508-822-9300  
 FAX: 508-896-9193    FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM  
 Address: 20 Foundry Street  
 Concord, NH 03301  
 Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

## Project Information

Project Name: Maine Background Soils Study  
 Project Location: Various, Maine  
 Project #: 5060.00  
 Project Manager: H. Roakes/ Troy Smith Maine  
 ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)  
 Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab: *11/19/21*

ALPHA Job #: REM02 *LZL 44267*

## Report Information Data Deliverables

FAX     EMAIL  
 ADEX     Add'l Deliverables

## Billing Information

Same as Client Info    PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

## ANALYSIS

PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids															
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<i>44267-31</i>	<i>FB-012-20211117</i>	<i>11/17/21</i>	<i>1530</i>	<i>AQ</i>	<i>MF</i>
<i>-32</i>	<i>FB-013-20211118</i>	<i>11/18/21</i>	<i>1540</i>	<i>AQ</i>	<i>MF</i>
<i>-33</i>	<i>TS-01-20211109</i>	<i>11/9/21</i>	<i>1306</i>	<i>AQ</i>	<i>MF</i>
<i>-34</i>	<i>TS-02-20211109</i>	<i>11/9/21</i>	<i>1306</i>	<i>AQ</i>	<i>MF</i>

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	D	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Richard Ziegler</i>	<i>11/19/21 1520</i>	<i>[Signature]</i>	<i>11/19/21 1520</i>
<i>[Signature]</i>	<i>11/19/21</i>	<i>[Signature]</i>	<i>11/19/21 1520</i>
<i>[Signature]</i>	<i>11/19/21 2:00</i>	<i>[Signature]</i>	<i>11/19/21 2:00</i>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**Alpha Analytical Laboratories, Inc.**  
**L2164327**



## ANALYTICAL REPORT

Lab Number:	L2164327
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	12/29/21

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).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2164327-01	AR-01_20211115	SOIL	VARIOUS, MAINE	11/15/21 13:00	11/19/21
L2164327-02	AR-02_20211115	SOIL	VARIOUS, MAINE	11/15/21 16:30	11/19/21
L2164327-03	AR-03_20211115	SOIL	VARIOUS, MAINE	11/15/21 15:00	11/19/21
L2164327-04	AR-04_20211115	SOIL	VARIOUS, MAINE	11/15/21 16:00	11/19/21
L2164327-05	PE-01_20211117	SOIL	VARIOUS, MAINE	11/17/21 12:00	11/19/21
L2164327-06	PE-02_20211117	SOIL	VARIOUS, MAINE	11/17/21 15:30	11/19/21
L2164327-07	PE-03_20211119	SOIL	VARIOUS, MAINE	11/19/21 09:20	11/19/21
L2164327-08	PE-04_20211117	SOIL	VARIOUS, MAINE	11/17/21 13:00	11/19/21
L2164327-09	PE-02_20211117_DUP	SOIL	VARIOUS, MAINE	11/17/21 15:35	11/19/21
L2164327-10	HA-01_20211118	SOIL	VARIOUS, MAINE	11/18/21 18:00	11/19/21
L2164327-11	HA-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 08:00	11/19/21
L2164327-12	HA-03_20211118	SOIL	VARIOUS, MAINE	11/18/21 17:00	11/19/21
L2164327-13	HA-04_20211118	SOIL	VARIOUS, MAINE	11/18/21 09:00	11/19/21
L2164327-14	WS-01_20211118	SOIL	VARIOUS, MAINE	11/18/21 10:05	11/19/21
L2164327-15	WS-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 13:20	11/19/21
L2164327-16	WS-03_20211118	SOIL	VARIOUS, MAINE	11/18/21 12:15	11/19/21
L2164327-17	WS-04_20211118	SOIL	VARIOUS, MAINE	11/18/21 15:00	11/19/21
L2164327-18	TB-03_20211103	WATER	VARIOUS, MAINE	11/03/21 16:10	11/19/21
L2164327-19	FB-04_20211117	WATER	VARIOUS, MAINE	11/17/21 16:25	11/19/21
L2164327-20	FB-05_20211118	WATER	VARIOUS, MAINE	11/18/21 09:12	11/19/21
L2164327-21	EB-04_20211117	WATER	VARIOUS, MAINE	11/17/21 16:15	11/19/21
L2164327-22	EB-05_20211117	WATER	VARIOUS, MAINE	11/17/21 16:20	11/19/21
L2164327-23	TB-04_20211103	WATER	VARIOUS, MAINE	11/03/21 16:10	11/19/21
L2164327-24	TB-05_20211103	WATER	VARIOUS, MAINE	11/03/21 16:10	11/19/21

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Case Narrative (continued)

#### Report Revision

December 29, 2021: At the client's request, L2164327-18 has been split into three samples. This report includes the results of the PFAS analysis performed on L2164327-23 and -24.

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2164327-05: At the client's request, this sample was cancelled.

#### PAHs by SIM

L2164327-01D, -06D, -09D, -16D, and -17D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

L2164327-07D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2164327-12, -13, and -15: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

L2164327-12: The surrogate recovery is outside the individual acceptance criteria for nitrobenzene-d5 (123%), but within the overall method allowances. The results of the original analysis are reported.

The WG1575467-2/-3 LCS/LCSD recoveries, associated with L2164327-22, are below the individual acceptance criteria for naphthalene (30%/25%), but within the overall method allowances. The results of the associated sample are reported.

The surrogate recovery for the WG1575467-3 LCSD, associated with L2164327-22, is outside the acceptance criteria for nitrobenzene-d5 (21%).

The WG1576793-3 LCSD recovery, associated with L2164327-11, -13, and -14, is above the individual acceptance criteria for 2-methylnaphthalene (156%), but within the overall method allowances. The results of the associated samples are reported. The LCS/LCSD RPD is above the acceptance criteria for 2-

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Case Narrative (continued)

methylnaphthalene (55%).

#### Perfluorinated Alkyl Acids by Isotope Dilution

L2164327-01, -02, -04, -07, -08, -10, -13, -14, -15, WG1575152-1, WG1576515-1, WG1575152-2, and WG1577684-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2164327-01 through -04 and -06 through -21: Sample results for Perfluorohexanesulfonic Acid (PFHxS), Perfluorooctanoic Acid (PFOA), Perfluorooctanesulfonic Acid (PFOS), N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA), and N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA) are reported as the sum of the branched and linear isomers.

L2164327-18, -23, and -24: The sample was extracted with the method required holding time exceeded.


#### Total Organic Carbon

The WG1577089-4 MS recoveries for total organic carbon (rep1) (0%) and total organic carbon (rep2) (181%), performed on L2164327-07, are outside the 75-125% acceptance criteria, possibly due to sample matrix. The associated SRM recoveries are within criteria, indicating the sample batch was in control, and all sample results were accepted.

The WG1577089-3 Laboratory Duplicate RPD for total organic carbon (rep1) (30%), performed on L2164327-07, is outside the acceptance criteria of 25%. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 12/29/21

# ORGANICS

# SEMIVOLATILES

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-01  
 Client ID: AR-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 17:53  
 Analyst: SG  
 Percent Solids: 77%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.099	J	ng/g	0.589	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.078	J	ng/g	0.589	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.295	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	0.063	JF	ng/g	0.589	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.098	1
Perfluoroheptanoic Acid (PFHpA)	0.090	J	ng/g	0.295	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.295	0.071	1
Perfluorooctanoic Acid (PFOA)	0.139	JF	ng/g	0.295	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.589	0.212	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.589	0.161	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.295	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	1.11		ng/g	0.295	0.153	1
Perfluorodecanoic Acid (PFDA)	0.114	JF	ng/g	0.295	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.589	0.338	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.352	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.589	0.238	1
Perfluoroundecanoic Acid (PFUnA)	0.057	JF	ng/g	0.589	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.589	0.180	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.589	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.589	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.589	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.589	0.241	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.589	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.8	4.49	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.18	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.95	0.141	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-01  
 Client ID: AR-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.95	0.202	1
PFAS, Total (6)	1.45	J	ng/g	0.295	0.049	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	150		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	143		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	177	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	46		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-01 D  
 Client ID: AR-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 15:47  
 Analyst: DV  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	100		ug/kg	84	18.	10
2-Chloronaphthalene	ND		ug/kg	84	11.	10
Fluoranthene	5600		ug/kg	84	5.9	10
Naphthalene	86		ug/kg	84	15.	10
Benzo(a)anthracene	4000		ug/kg	84	8.0	10
Benzo(a)pyrene	3100		ug/kg	84	10.	10
Benzo(b)fluoranthene	3900		ug/kg	84	8.0	10
Benzo(k)fluoranthene	1300		ug/kg	84	7.6	10
Chrysene	2600		ug/kg	84	6.3	10
Acenaphthylene	490		ug/kg	84	10.	10
Anthracene	650		ug/kg	84	6.7	10
Benzo(ghi)perylene	2100		ug/kg	84	7.1	10
Fluorene	120		ug/kg	84	10.	10
Phenanthrene	1700		ug/kg	84	7.1	10
Dibenzo(a,h)anthracene	520		ug/kg	84	8.4	10
Indeno(1,2,3-cd)pyrene	2500		ug/kg	84	10.	10
Pyrene	4900		ug/kg	84	5.9	10
1-Methylnaphthalene	28	J	ug/kg	84	13.	10
2-Methylnaphthalene	44	J	ug/kg	84	24.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-02  
 Client ID: AR-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 13:40  
 Analyst: DV  
 Percent Solids: 72%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	9.2	1.9	1
2-Chloronaphthalene	ND		ug/kg	9.2	1.2	1
Fluoranthene	87		ug/kg	9.2	0.64	1
Naphthalene	6.9	J	ug/kg	9.2	1.6	1
Benzo(a)anthracene	73		ug/kg	9.2	0.87	1
Benzo(a)pyrene	50		ug/kg	9.2	1.1	1
Benzo(b)fluoranthene	65		ug/kg	9.2	0.87	1
Benzo(k)fluoranthene	20		ug/kg	9.2	0.83	1
Chrysene	46		ug/kg	9.2	0.69	1
Acenaphthylene	17		ug/kg	9.2	1.2	1
Anthracene	12		ug/kg	9.2	0.74	1
Benzo(ghi)perylene	32		ug/kg	9.2	0.78	1
Fluorene	4.6	J	ug/kg	9.2	1.1	1
Phenanthrene	46		ug/kg	9.2	0.78	1
Dibenzo(a,h)anthracene	8.8	J	ug/kg	9.2	0.92	1
Indeno(1,2,3-cd)pyrene	37		ug/kg	9.2	1.1	1
Pyrene	80		ug/kg	9.2	0.64	1
1-Methylnaphthalene	2.6	J	ug/kg	9.2	1.4	1
2-Methylnaphthalene	3.8	J	ug/kg	9.2	2.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	54		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-02  
 Client ID: AR-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 18:09  
 Analyst: SG  
 Percent Solids: 72%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.082	J	ng/g	0.620	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.620	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.310	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.24	0.080	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.620	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.24	0.104	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.310	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.310	0.075	1
Perfluorooctanoic Acid (PFOA)	0.056	JF	ng/g	0.310	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.620	0.222	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.620	0.169	1
Perfluorononanoic Acid (PFNA)	0.111	J	ng/g	0.310	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.310	0.161	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.310	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.620	0.356	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.24	0.371	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.620	0.250	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.620	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.620	0.190	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.620	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.620	0.105	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.620	0.087	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.620	0.254	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.620	0.067	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.4	4.72	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.24	0.051	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.10	0.149	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-02  
 Client ID: AR-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.10	0.212	1
PFAS, Total (6)	0.167	J	ng/g	0.310	0.052	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	147		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	136		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	205	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	27		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-03  
 Client ID: AR-03\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 13:56  
 Analyst: DV  
 Percent Solids: 63%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	10	2.2	1
2-Chloronaphthalene	ND		ug/kg	10	1.4	1
Fluoranthene	4.7	J	ug/kg	10	0.73	1
Naphthalene	11		ug/kg	10	1.9	1
Benzo(a)anthracene	2.7	J	ug/kg	10	0.99	1
Benzo(a)pyrene	1.3	J	ug/kg	10	1.2	1
Benzo(b)fluoranthene	2.8	J	ug/kg	10	0.99	1
Benzo(k)fluoranthene	ND		ug/kg	10	0.94	1
Chrysene	1.7	J	ug/kg	10	0.78	1
Acenaphthylene	ND		ug/kg	10	1.3	1
Anthracene	ND		ug/kg	10	0.83	1
Benzo(ghi)perylene	1.1	J	ug/kg	10	0.89	1
Fluorene	ND		ug/kg	10	1.2	1
Phenanthrene	3.6	J	ug/kg	10	0.89	1
Dibenzo(a,h)anthracene	ND		ug/kg	10	1.0	1
Indeno(1,2,3-cd)pyrene	1.4	J	ug/kg	10	1.2	1
Pyrene	3.5	J	ug/kg	10	0.73	1
1-Methylnaphthalene	3.9	J	ug/kg	10	1.6	1
2-Methylnaphthalene	5.7	J	ug/kg	10	3.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	50		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-03  
 Client ID: AR-03\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 18:26  
 Analyst: SG  
 Percent Solids: 63%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.770	0.035	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.770	0.071	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.385	0.060	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.54	0.099	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.770	0.081	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.54	0.128	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.385	0.069	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.385	0.093	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.385	0.065	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.770	0.276	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.770	0.210	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.385	0.115	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.385	0.200	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.385	0.103	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.770	0.442	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.54	0.460	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.770	0.310	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.770	0.072	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.770	0.236	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.770	0.151	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.770	0.130	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.770	0.108	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.770	0.315	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.770	0.083	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	15.4	5.87	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.54	0.064	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.85	0.185	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-03  
 Client ID: AR-03\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.85	0.263	1
PFAS, Total (6)	ND		ng/g	0.385	0.065	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	171		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	107		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	24		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-04  
 Client ID: AR-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 15:02  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 11/25/21 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	3.5	J	ug/kg	7.9	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.9	1.0	1
Fluoranthene	170		ug/kg	7.9	0.55	1
Naphthalene	6.5	J	ug/kg	7.9	1.4	1
Benzo(a)anthracene	140		ug/kg	7.9	0.75	1
Benzo(a)pyrene	93		ug/kg	7.9	0.94	1
Benzo(b)fluoranthene	120		ug/kg	7.9	0.75	1
Benzo(k)fluoranthene	31		ug/kg	7.9	0.71	1
Chrysene	83		ug/kg	7.9	0.59	1
Acenaphthylene	29		ug/kg	7.9	0.98	1
Anthracene	19		ug/kg	7.9	0.63	1
Benzo(ghi)perylene	60		ug/kg	7.9	0.67	1
Fluorene	7.8	J	ug/kg	7.9	0.94	1
Phenanthrene	71		ug/kg	7.9	0.67	1
Dibenzo(a,h)anthracene	16		ug/kg	7.9	0.79	1
Indeno(1,2,3-cd)pyrene	70		ug/kg	7.9	0.94	1
Pyrene	150		ug/kg	7.9	0.55	1
1-Methylnaphthalene	3.3	J	ug/kg	7.9	1.2	1
2-Methylnaphthalene	5.0	J	ug/kg	7.9	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	65		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-04  
 Client ID: AR-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 11/27/21 18:43  
 Analyst: SG  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.051	J	ng/g	0.555	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.555	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.278	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.072	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.555	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.11	0.093	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.278	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.278	0.067	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.278	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.555	0.199	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.555	0.152	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.278	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.278	0.144	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.278	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.555	0.319	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.332	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.555	0.224	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.555	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.555	0.170	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.555	0.109	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.555	0.094	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.555	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.555	0.227	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.555	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.1	4.23	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.11	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.78	0.133	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-04  
 Client ID: AR-04\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.78	0.190	1
PFAS, Total (6)	ND		ng/g	0.278	0.047	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	155		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	143		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	241	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	99		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	48		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-06  
 Client ID: PE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 17:04  
 Analyst: SG  
 Percent Solids: 80%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.055	J	ng/g	0.553	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.553	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.277	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.071	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.553	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.11	0.092	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.277	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.277	0.067	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.277	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.553	0.199	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.553	0.151	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.277	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.243	J	ng/g	0.277	0.144	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.277	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.553	0.318	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.331	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.553	0.223	1
Perfluoroundecanoic Acid (PFUnA)	0.066	JF	ng/g	0.553	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.553	0.169	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.553	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.553	0.094	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.553	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.553	0.226	1
Perfluorotetradecanoic Acid (PFTA)	0.078	J	ng/g	0.553	0.060	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.1	4.22	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.11	0.046	1
Perfluorohexadecanoic Acid (PFHxDA)	0.136	JF	ng/g	2.77	0.133	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-06  
 Client ID: PE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.77	0.189	1
PFAS, Total (6)	0.243	J	ng/g	0.277	0.046	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	150		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	144		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	36		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	28		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-06 D  
 Client ID: PE-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:30  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 17:59  
 Analyst: DV  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	18		ug/kg	16	3.4	2
2-Chloronaphthalene	ND		ug/kg	16	2.1	2
Fluoranthene	920		ug/kg	16	1.2	2
Naphthalene	16		ug/kg	16	3.0	2
Benzo(a)anthracene	780		ug/kg	16	1.6	2
Benzo(a)pyrene	540		ug/kg	16	2.0	2
Benzo(b)fluoranthene	680		ug/kg	16	1.6	2
Benzo(k)fluoranthene	230		ug/kg	16	1.5	2
Chrysene	490		ug/kg	16	1.2	2
Acenaphthylene	110		ug/kg	16	2.0	2
Anthracene	110		ug/kg	16	1.3	2
Benzo(ghi)perylene	330		ug/kg	16	1.4	2
Fluorene	24		ug/kg	16	2.0	2
Phenanthrene	300		ug/kg	16	1.4	2
Dibenzo(a,h)anthracene	100		ug/kg	16	1.6	2
Indeno(1,2,3-cd)pyrene	410		ug/kg	16	2.0	2
Pyrene	860		ug/kg	16	1.2	2
1-Methylnaphthalene	6.7	J	ug/kg	16	2.5	2
2-Methylnaphthalene	9.4	J	ug/kg	16	4.7	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	74		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-07  
 Client ID: PE-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 09:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 17:21  
 Analyst: SG  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.111	J	ng/g	0.598	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.070	J	ng/g	0.598	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.299	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.066	J	ng/g	0.598	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	0.080	J	ng/g	0.299	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.299	0.072	1
Perfluorooctanoic Acid (PFOA)	0.193	J	ng/g	0.299	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.598	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.598	0.163	1
Perfluorononanoic Acid (PFNA)	0.145	J	ng/g	0.299	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	0.865		ng/g	0.299	0.156	1
Perfluorodecanoic Acid (PFDA)	0.118	J	ng/g	0.299	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.598	0.343	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.358	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.598	0.241	1
Perfluoroundecanoic Acid (PFUnA)	0.077	J	ng/g	0.598	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.598	0.183	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.598	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.598	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.598	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.598	0.245	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.598	0.065	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.0	4.56	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.20	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	0.169	JF	ng/g	2.99	0.144	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-07  
 Client ID: PE-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 09:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.99	0.204	1
PFAS, Total (6)	1.40	J	ng/g	0.299	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	148		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	146		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	145		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	73		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	54		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	77		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	21		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-07 D  
 Client ID: PE-03\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 09:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 18:15  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	33	J	ug/kg	44	9.3	5
2-Chloronaphthalene	ND		ug/kg	44	5.8	5
Fluoranthene	1600		ug/kg	44	3.1	5
Naphthalene	24	J	ug/kg	44	8.0	5
Benzo(a)anthracene	1100		ug/kg	44	4.2	5
Benzo(a)pyrene	760		ug/kg	44	5.3	5
Benzo(b)fluoranthene	1000		ug/kg	44	4.2	5
Benzo(k)fluoranthene	300		ug/kg	44	4.0	5
Chrysene	720		ug/kg	44	3.3	5
Acenaphthylene	240		ug/kg	44	5.5	5
Anthracene	150		ug/kg	44	3.5	5
Benzo(ghi)perylene	510		ug/kg	44	3.8	5
Fluorene	43	J	ug/kg	44	5.3	5
Phenanthrene	640		ug/kg	44	3.8	5
Dibenzo(a,h)anthracene	130		ug/kg	44	4.4	5
Indeno(1,2,3-cd)pyrene	620		ug/kg	44	5.3	5
Pyrene	1400		ug/kg	44	3.1	5
1-Methylnaphthalene	9.3	J	ug/kg	44	6.9	5
2-Methylnaphthalene	ND		ug/kg	44	13.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	82		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-08  
 Client ID: PE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 16:58  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.9	1.9	1
2-Chloronaphthalene	ND		ug/kg	8.9	1.2	1
Fluoranthene	11		ug/kg	8.9	0.62	1
Naphthalene	ND		ug/kg	8.9	1.6	1
Benzo(a)anthracene	3.4	J	ug/kg	8.9	0.84	1
Benzo(a)pyrene	4.3	J	ug/kg	8.9	1.1	1
Benzo(b)fluoranthene	7.1	J	ug/kg	8.9	0.84	1
Benzo(k)fluoranthene	2.3	J	ug/kg	8.9	0.80	1
Chrysene	5.2	J	ug/kg	8.9	0.67	1
Acenaphthylene	2.2	J	ug/kg	8.9	1.1	1
Anthracene	1.6	J	ug/kg	8.9	0.71	1
Benzo(ghi)perylene	3.7	J	ug/kg	8.9	0.76	1
Fluorene	ND		ug/kg	8.9	1.1	1
Phenanthrene	6.6	J	ug/kg	8.9	0.76	1
Dibenzo(a,h)anthracene	ND		ug/kg	8.9	0.89	1
Indeno(1,2,3-cd)pyrene	4.1	J	ug/kg	8.9	1.1	1
Pyrene	10		ug/kg	8.9	0.62	1
1-Methylnaphthalene	ND		ug/kg	8.9	1.4	1
2-Methylnaphthalene	ND		ug/kg	8.9	2.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-08  
 Client ID: PE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/04/21 17:37  
 Analyst: SG  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.227	J	ng/g	0.600	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.067	J	ng/g	0.600	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.300	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.066	J	ng/g	0.600	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	0.118	J	ng/g	0.300	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.300	0.073	1
Perfluorooctanoic Acid (PFOA)	0.164	J	ng/g	0.300	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.600	0.216	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.600	0.164	1
Perfluorononanoic Acid (PFNA)	0.162	J	ng/g	0.300	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	0.308		ng/g	0.300	0.156	1
Perfluorodecanoic Acid (PFDA)	0.083	JF	ng/g	0.300	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.600	0.345	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.359	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.600	0.242	1
Perfluoroundecanoic Acid (PFUnA)	0.097	J	ng/g	0.600	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.600	0.184	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.600	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.600	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.600	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.600	0.246	1
Perfluorotetradecanoic Acid (PFTA)	0.093	J	ng/g	0.600	0.065	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.0	4.57	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.20	0.050	1
Perfluorohexadecanoic Acid (PFHxDA)	0.170	J	ng/g	3.00	0.144	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-08  
 Client ID: PE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 13:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.00	0.205	1
PFAS, Total (6)	0.835	J	ng/g	0.300	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	161	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	226	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	72		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	50	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	33		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	64		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	25		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-09  
 Client ID: PE-02\_20211117\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 10:36  
 Analyst: SG  
 Percent Solids: 79%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.089	J	ng/g	0.571	0.026	1
Perfluoropentanoic Acid (PFPeA)	0.053	J	ng/g	0.571	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.286	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.074	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.571	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.095	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.286	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.286	0.069	1
Perfluorooctanoic Acid (PFOA)	0.051	JF	ng/g	0.286	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.571	0.205	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.571	0.156	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.286	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	0.286		ng/g	0.286	0.148	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.286	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.571	0.328	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.342	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.571	0.230	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.571	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.571	0.175	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.571	0.112	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.571	0.097	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.571	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.571	0.234	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.571	0.062	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.4	4.35	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.14	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.86	0.137	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-09  
 Client ID: PE-02\_20211117\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.86	0.195	1
PFAS, Total (6)	0.337	J	ng/g	0.286	0.048	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		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)	79		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	59		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	63		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-09 D  
 Client ID: PE-02\_20211117\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:35  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 18:31  
 Analyst: DV  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 11/28/21 23:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	14	J	ug/kg	16	3.4	2
2-Chloronaphthalene	ND		ug/kg	16	2.1	2
Fluoranthene	970		ug/kg	16	1.2	2
Naphthalene	14	J	ug/kg	16	3.0	2
Benzo(a)anthracene	780		ug/kg	16	1.6	2
Benzo(a)pyrene	550		ug/kg	16	2.0	2
Benzo(b)fluoranthene	700		ug/kg	16	1.6	2
Benzo(k)fluoranthene	230		ug/kg	16	1.5	2
Chrysene	470		ug/kg	16	1.2	2
Acenaphthylene	91		ug/kg	16	2.0	2
Anthracene	99		ug/kg	16	1.3	2
Benzo(ghi)perylene	340		ug/kg	16	1.4	2
Fluorene	18		ug/kg	16	2.0	2
Phenanthrene	240		ug/kg	16	1.4	2
Dibenzo(a,h)anthracene	100		ug/kg	16	1.6	2
Indeno(1,2,3-cd)pyrene	400		ug/kg	16	2.0	2
Pyrene	880		ug/kg	16	1.2	2
1-Methylnaphthalene	5.1	J	ug/kg	16	2.6	2
2-Methylnaphthalene	7.3	J	ug/kg	16	4.7	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-10  
 Client ID: HA-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 18:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 18:50  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.0	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.0	1.0	1
Fluoranthene	160		ug/kg	8.0	0.56	1
Naphthalene	4.0	J	ug/kg	8.0	1.4	1
Benzo(a)anthracene	120		ug/kg	8.0	0.76	1
Benzo(a)pyrene	82		ug/kg	8.0	0.96	1
Benzo(b)fluoranthene	120		ug/kg	8.0	0.76	1
Benzo(k)fluoranthene	33		ug/kg	8.0	0.72	1
Chrysene	80		ug/kg	8.0	0.60	1
Acenaphthylene	28		ug/kg	8.0	1.0	1
Anthracene	17		ug/kg	8.0	0.64	1
Benzo(ghi)perylene	50		ug/kg	8.0	0.68	1
Fluorene	7.3	J	ug/kg	8.0	0.96	1
Phenanthrene	78		ug/kg	8.0	0.68	1
Dibenzo(a,h)anthracene	16		ug/kg	8.0	0.80	1
Indeno(1,2,3-cd)pyrene	62		ug/kg	8.0	0.96	1
Pyrene	130		ug/kg	8.0	0.56	1
1-Methylnaphthalene	1.6	J	ug/kg	8.0	1.2	1
2-Methylnaphthalene	ND		ug/kg	8.0	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-10  
 Client ID: HA-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 18:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 10:53  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.034	J	ng/g	0.598	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.598	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.299	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.598	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.299	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.299	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.299	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.598	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.598	0.163	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.299	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.299	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.299	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.598	0.343	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.357	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.598	0.241	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.598	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.598	0.183	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.598	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.598	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.598	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.598	0.244	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.598	0.065	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.0	4.56	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.20	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.99	0.143	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-10  
 Client ID: HA-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 18:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.99	0.204	1
PFAS, Total (6)	ND		ng/g	0.299	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77	Q	79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	38		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-11  
 Client ID: HA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 16:08  
 Analyst: DV  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.8	1.6	1
2-Chloronaphthalene	ND		ug/kg	7.8	1.0	1
Fluoranthene	7.8		ug/kg	7.8	0.54	1
Naphthalene	ND		ug/kg	7.8	1.4	1
Benzo(a)anthracene	3.2	J	ug/kg	7.8	0.74	1
Benzo(a)pyrene	1.2	J	ug/kg	7.8	0.93	1
Benzo(b)fluoranthene	1.6	J	ug/kg	7.8	0.74	1
Benzo(k)fluoranthene	ND		ug/kg	7.8	0.70	1
Chrysene	1.9	J	ug/kg	7.8	0.58	1
Acenaphthylene	ND		ug/kg	7.8	0.97	1
Anthracene	4.6	J	ug/kg	7.8	0.62	1
Benzo(ghi)perylene	0.82	J	ug/kg	7.8	0.66	1
Fluorene	2.1	J	ug/kg	7.8	0.93	1
Phenanthrene	14		ug/kg	7.8	0.66	1
Dibenzo(a,h)anthracene	ND		ug/kg	7.8	0.78	1
Indeno(1,2,3-cd)pyrene	0.93	J	ug/kg	7.8	0.93	1
Pyrene	6.2	J	ug/kg	7.8	0.54	1
1-Methylnaphthalene	ND		ug/kg	7.8	1.2	1
2-Methylnaphthalene	ND		ug/kg	7.8	2.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-11  
 Client ID: HA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 11:09  
 Analyst: SG  
 Percent Solids: 85%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.533	0.024	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.533	0.049	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.266	0.042	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.06	0.069	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.533	0.056	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.06	0.089	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.266	0.048	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.266	0.065	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.266	0.045	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.533	0.191	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.533	0.145	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.266	0.080	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.266	0.138	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.266	0.071	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.533	0.306	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.06	0.319	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.533	0.215	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.533	0.050	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.533	0.163	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.533	0.104	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.533	0.090	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.533	0.075	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.533	0.218	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.533	0.058	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.6	4.06	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.06	0.044	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.66	0.128	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-11  
 Client ID: HA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.66	0.182	1
PFAS, Total (6)	ND		ng/g	0.266	0.045	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	34		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	91		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-12  
 Client ID: HA-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 17:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 19:07  
 Analyst: DV  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	26	5.4	1
2-Chloronaphthalene	ND		ug/kg	26	3.3	1
Fluoranthene	170		ug/kg	26	1.8	1
Naphthalene	ND		ug/kg	26	4.6	1
Benzo(a)anthracene	71		ug/kg	26	2.4	1
Benzo(a)pyrene	51		ug/kg	26	3.1	1
Benzo(b)fluoranthene	85		ug/kg	26	2.4	1
Benzo(k)fluoranthene	32		ug/kg	26	2.3	1
Chrysene	66		ug/kg	26	1.9	1
Acenaphthylene	18	J	ug/kg	26	3.2	1
Anthracene	14	J	ug/kg	26	2.0	1
Benzo(ghi)perylene	36		ug/kg	26	2.2	1
Fluorene	7.3	J	ug/kg	26	3.1	1
Phenanthrene	100		ug/kg	26	2.2	1
Dibenzo(a,h)anthracene	9.9	J	ug/kg	26	2.6	1
Indeno(1,2,3-cd)pyrene	45		ug/kg	26	3.1	1
Pyrene	130		ug/kg	26	1.8	1
1-Methylnaphthalene	ND		ug/kg	26	4.0	1
2-Methylnaphthalene	ND		ug/kg	26	7.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-12  
 Client ID: HA-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 17:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 11:26  
 Analyst: SG  
 Percent Solids: 75%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.133	J	ng/g	0.629	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.629	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.314	0.049	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.26	0.081	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.629	0.066	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.26	0.105	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.314	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.314	0.076	1
Perfluorooctanoic Acid (PFOA)	0.093	J	ng/g	0.314	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.629	0.226	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.629	0.172	1
Perfluorononanoic Acid (PFNA)	0.124	J	ng/g	0.314	0.094	1
Perfluorooctanesulfonic Acid (PFOS)	0.285	J	ng/g	0.314	0.164	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.314	0.084	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.629	0.361	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.26	0.376	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.629	0.254	1
Perfluoroundecanoic Acid (PFUnA)	0.064	JF	ng/g	0.629	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.629	0.192	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.629	0.123	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.629	0.106	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.629	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.629	0.257	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.629	0.068	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.6	4.79	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.26	0.052	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.14	0.151	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-12  
 Client ID: HA-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 17:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.14	0.215	1
PFAS, Total (6)	0.502	J	ng/g	0.314	0.053	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	110		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	104		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	109		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	50		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	90		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	100		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-13  
 Client ID: HA-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 16:41  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	23	4.8	1
2-Chloronaphthalene	ND		ug/kg	23	2.9	1
Fluoranthene	20	J	ug/kg	23	1.6	1
Naphthalene	15	J	ug/kg	23	4.1	1
Benzo(a)anthracene	12	J	ug/kg	23	2.2	1
Benzo(a)pyrene	8.5	J	ug/kg	23	2.7	1
Benzo(b)fluoranthene	16	J	ug/kg	23	2.2	1
Benzo(k)fluoranthene	4.3	J	ug/kg	23	2.0	1
Chrysene	15	J	ug/kg	23	1.7	1
Acenaphthylene	6.9	J	ug/kg	23	2.8	1
Anthracene	3.2	J	ug/kg	23	1.8	1
Benzo(ghi)perylene	8.6	J	ug/kg	23	1.9	1
Fluorene	ND		ug/kg	23	2.7	1
Phenanthrene	15	J	ug/kg	23	1.9	1
Dibenzo(a,h)anthracene	ND		ug/kg	23	2.3	1
Indeno(1,2,3-cd)pyrene	9.4	J	ug/kg	23	2.7	1
Pyrene	17	J	ug/kg	23	1.6	1
1-Methylnaphthalene	ND		ug/kg	23	3.5	1
2-Methylnaphthalene	ND		ug/kg	23	6.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	76		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-13  
 Client ID: HA-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 11:42  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.124	J	ng/g	0.568	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.568	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.284	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.568	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.095	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.284	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.284	0.069	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.284	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.568	0.204	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.568	0.155	1
Perfluorononanoic Acid (PFNA)	0.132	JF	ng/g	0.284	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	0.261	J	ng/g	0.284	0.148	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.284	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.568	0.326	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.340	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.568	0.229	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.568	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.568	0.174	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.568	0.111	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.568	0.096	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.568	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.568	0.232	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.568	0.061	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.4	4.33	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.14	0.047	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.84	0.136	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-13  
 Client ID: HA-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.84	0.194	1
PFAS, Total (6)	0.393	J	ng/g	0.284	0.048	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	60	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	61		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	56	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	152		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	75		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	70		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-14  
 Client ID: WS-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 11/30/21 16:25  
 Analyst: DV  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	8.2	1.7	1
2-Chloronaphthalene	ND		ug/kg	8.2	1.1	1
Fluoranthene	22		ug/kg	8.2	0.57	1
Naphthalene	1.7	J	ug/kg	8.2	1.5	1
Benzo(a)anthracene	13		ug/kg	8.2	0.78	1
Benzo(a)pyrene	7.5	J	ug/kg	8.2	0.98	1
Benzo(b)fluoranthene	11		ug/kg	8.2	0.78	1
Benzo(k)fluoranthene	3.5	J	ug/kg	8.2	0.73	1
Chrysene	8.8		ug/kg	8.2	0.61	1
Acenaphthylene	2.3	J	ug/kg	8.2	1.0	1
Anthracene	3.0	J	ug/kg	8.2	0.65	1
Benzo(ghi)perylene	5.0	J	ug/kg	8.2	0.69	1
Fluorene	ND		ug/kg	8.2	0.98	1
Phenanthrene	12		ug/kg	8.2	0.69	1
Dibenzo(a,h)anthracene	1.2	J	ug/kg	8.2	0.82	1
Indeno(1,2,3-cd)pyrene	6.3	J	ug/kg	8.2	0.98	1
Pyrene	19		ug/kg	8.2	0.57	1
1-Methylnaphthalene	ND		ug/kg	8.2	1.3	1
2-Methylnaphthalene	ND		ug/kg	8.2	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-14  
 Client ID: WS-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 11:59  
 Analyst: SG  
 Percent Solids: 81%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.596	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.596	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.298	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.596	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.100	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.298	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.298	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.298	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.596	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.596	0.163	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.298	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.298	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.298	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.596	0.342	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.357	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.596	0.240	1
Perfluoroundecanoic Acid (PFUnA)	0.152	J	ng/g	0.596	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.596	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.596	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.596	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.596	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.596	0.244	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.596	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.9	4.54	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.19	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.98	0.143	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-14  
 Client ID: WS-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:05  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.98	0.204	1
PFAS, Total (6)	ND		ng/g	0.298	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	47	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	46	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	45	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	146		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	52	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	54	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	38		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	48		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	33		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-15  
 Client ID: WS-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 19:23  
 Analyst: DV  
 Percent Solids: 60%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	7.3	J	ug/kg	32	6.8	1
2-Chloronaphthalene	ND		ug/kg	32	4.2	1
Fluoranthene	300		ug/kg	32	2.3	1
Naphthalene	9.8	J	ug/kg	32	5.8	1
Benzo(a)anthracene	210		ug/kg	32	3.1	1
Benzo(a)pyrene	140		ug/kg	32	3.9	1
Benzo(b)fluoranthene	200		ug/kg	32	3.1	1
Benzo(k)fluoranthene	48		ug/kg	32	2.9	1
Chrysene	150		ug/kg	32	2.4	1
Acenaphthylene	37		ug/kg	32	4.1	1
Anthracene	46		ug/kg	32	2.6	1
Benzo(ghi)perylene	84		ug/kg	32	2.8	1
Fluorene	18	J	ug/kg	32	3.9	1
Phenanthrene	200		ug/kg	32	2.8	1
Dibenzo(a,h)anthracene	25	J	ug/kg	32	3.2	1
Indeno(1,2,3-cd)pyrene	100		ug/kg	32	3.9	1
Pyrene	270		ug/kg	32	2.3	1
1-Methylnaphthalene	6.0	J	ug/kg	32	5.0	1
2-Methylnaphthalene	ND		ug/kg	32	9.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	40		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-15  
 Client ID: WS-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 12:16  
 Analyst: SG  
 Percent Solids: 60%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.312	J	ng/g	0.790	0.036	1
Perfluoropentanoic Acid (PFPeA)	0.093	J	ng/g	0.790	0.073	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.395	0.062	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.58	0.102	1
Perfluorohexanoic Acid (PFHxA)	0.115	J	ng/g	0.790	0.083	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.58	0.132	1
Perfluoroheptanoic Acid (PFHpA)	0.168	J	ng/g	0.395	0.071	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.395	0.096	1
Perfluorooctanoic Acid (PFOA)	0.210	JF	ng/g	0.395	0.066	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.790	0.284	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.790	0.216	1
Perfluorononanoic Acid (PFNA)	0.262	J	ng/g	0.395	0.118	1
Perfluorooctanesulfonic Acid (PFOS)	0.436		ng/g	0.395	0.206	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.395	0.106	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.790	0.454	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.58	0.473	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.790	0.318	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.790	0.074	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.790	0.242	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.790	0.155	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.790	0.134	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.790	0.111	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.790	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.790	0.085	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	15.8	6.02	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.58	0.065	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	3.95	0.190	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-15  
 Client ID: WS-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 13:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	3.95	0.270	1
PFAS, Total (6)	1.08	J	ng/g	0.395	0.066	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	45	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	41	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	32	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	32	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	35	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	37	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	40	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	32		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	48	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	45	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	43		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	32		10-145



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-16  
 Client ID: WS-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 12:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 12:32  
 Analyst: SG  
 Percent Solids: 74%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.135	J	ng/g	0.594	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.594	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.297	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.594	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.099	1
Perfluoroheptanoic Acid (PFHpA)	0.058	J	ng/g	0.297	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.297	0.072	1
Perfluorooctanoic Acid (PFOA)	0.150	JF	ng/g	0.297	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.594	0.213	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.594	0.162	1
Perfluorononanoic Acid (PFNA)	0.094	J	ng/g	0.297	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.494		ng/g	0.297	0.154	1
Perfluorodecanoic Acid (PFDA)	0.086	JF	ng/g	0.297	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.594	0.341	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.355	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.594	0.239	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.594	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.594	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.594	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.594	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.594	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.594	0.243	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.594	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.9	4.53	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.19	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.97	0.142	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-16  
 Client ID: WS-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 12:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.97	0.203	1
PFAS, Total (6)	0.881	J	ng/g	0.297	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	116		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	134		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	77		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-16 D  
 Client ID: WS-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 12:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 17:26  
 Analyst: DV  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	81		ug/kg	45	9.4	5
2-Chloronaphthalene	ND		ug/kg	45	5.8	5
Fluoranthene	2700		ug/kg	45	3.2	5
Naphthalene	210		ug/kg	45	8.1	5
Benzo(a)anthracene	3300		ug/kg	45	4.3	5
Benzo(a)pyrene	2000		ug/kg	45	5.4	5
Benzo(b)fluoranthene	2400		ug/kg	45	4.3	5
Benzo(k)fluoranthene	760		ug/kg	45	4.0	5
Chrysene	1700		ug/kg	45	3.4	5
Acenaphthylene	1100		ug/kg	45	5.6	5
Anthracene	510		ug/kg	45	3.6	5
Benzo(ghi)perylene	1400		ug/kg	45	3.8	5
Fluorene	190		ug/kg	45	5.4	5
Phenanthrene	1300		ug/kg	45	3.8	5
Dibenzo(a,h)anthracene	400		ug/kg	45	4.5	5
Indeno(1,2,3-cd)pyrene	1600		ug/kg	45	5.4	5
Pyrene	3100		ug/kg	45	3.2	5
1-Methylnaphthalene	110		ug/kg	45	7.0	5
2-Methylnaphthalene	140		ug/kg	45	13.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-17  
 Client ID: WS-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/11/21 12:49  
 Analyst: SG  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.195	J	ng/g	0.581	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.581	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.290	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.16	0.075	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.581	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.16	0.097	1
Perfluoroheptanoic Acid (PFHpA)	0.053	JF	ng/g	0.290	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.290	0.070	1
Perfluorooctanoic Acid (PFOA)	0.091	JF	ng/g	0.290	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.581	0.208	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.581	0.158	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.290	0.087	1
Perfluorooctanesulfonic Acid (PFOS)	0.352		ng/g	0.290	0.151	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.290	0.078	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.581	0.333	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.16	0.347	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.581	0.234	1
Perfluoroundecanoic Acid (PFUnA)	0.069	JF	ng/g	0.581	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.581	0.178	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.581	0.114	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.581	0.098	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.581	0.081	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.581	0.237	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.581	0.063	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.6	4.42	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.16	0.048	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.90	0.139	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-17  
 Client ID: WS-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.90	0.198	1
PFAS, Total (6)	0.496	J	ng/g	0.290	0.049	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	160		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	106		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-17 D  
 Client ID: WS-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:00  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/10/21 17:09  
 Analyst: DV  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	220		ug/kg	80	17.	10
2-Chloronaphthalene	ND		ug/kg	80	10.	10
Fluoranthene	5000		ug/kg	80	5.6	10
Naphthalene	200		ug/kg	80	14.	10
Benzo(a)anthracene	3400		ug/kg	80	7.6	10
Benzo(a)pyrene	2200		ug/kg	80	9.6	10
Benzo(b)fluoranthene	2700		ug/kg	80	7.6	10
Benzo(k)fluoranthene	930		ug/kg	80	7.2	10
Chrysene	2200		ug/kg	80	6.0	10
Acenaphthylene	560		ug/kg	80	9.9	10
Anthracene	770		ug/kg	80	6.4	10
Benzo(ghi)perylene	1300		ug/kg	80	6.8	10
Fluorene	320		ug/kg	80	9.6	10
Phenanthrene	3400		ug/kg	80	6.8	10
Dibenzo(a,h)anthracene	390		ug/kg	80	8.0	10
Indeno(1,2,3-cd)pyrene	1500		ug/kg	80	9.6	10
Pyrene	4700		ug/kg	80	5.6	10
1-Methylnaphthalene	170		ug/kg	80	12.	10
2-Methylnaphthalene	270		ug/kg	80	23.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-18  
**Client ID:** TB-03\_20211103  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/03/21 16:10  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 134,LCMSMS-ID  
**Analytical Date:** 11/27/21 18:57  
**Analyst:** SG

**Extraction Method:** ALPHA 23528  
**Extraction Date:** 11/24/21 06:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	0.422	J	ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.209	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.397	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.288	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.605	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.274	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.443	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.267	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.985	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.862	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.707	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	0.225	JF	ng/l	1.76	0.218	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	44.0	20.0	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.76	0.295	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.52	1.09	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-18  
 Client ID: TB-03\_20211103  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.52	1.01	1
PFAS, Total (6)	ND		ng/l	1.76	0.198	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	129		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	116		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	124		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	59		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-19  
 Client ID: FB-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 16:25  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/10/21 06:15  
 Analyst: SG

Extraction Method: ALPHA 23528  
 Extraction Date: 12/01/21 05:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.371	1
Perfluoropentanoic Acid (PFPeA)	0.703	J	ng/l	1.82	0.360	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.411	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.298	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.626	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.459	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.590	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.892	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.528	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.732	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	0.535	J	ng/l	1.82	0.226	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	45.5	20.7	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.82	0.306	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.64	1.13	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-19  
 Client ID: FB-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 16:25  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.64	1.04	1
PFAS, Total (6)	ND		ng/l	1.82	0.205	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	115		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	109		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	126		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-20  
 Client ID: FB-05\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:12  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/02/21 13:43  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 12/01/21 14:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.75	0.356	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.75	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.395	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.75	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.214	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.328	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.75	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.601	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.978	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.566	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.856	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.506	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.702	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.216	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.6	19.8	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.75	0.293	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.49	1.08	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-20  
 Client ID: FB-05\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:12  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.49	1.00	1
PFAS, Total (6)	ND		ng/l	1.75	0.197	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	131		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	150		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	58		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-21  
 Client ID: EB-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 16:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/10/21 06:32  
 Analyst: SG

Extraction Method: ALPHA 23528  
 Extraction Date: 12/01/21 05:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.85	0.377	1
Perfluoropentanoic Acid (PFPeA)	0.706	J	ng/l	1.85	0.366	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.220	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.85	0.418	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.85	0.303	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.85	0.227	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.85	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.348	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.85	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.636	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.85	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.85	0.466	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.281	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.85	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.599	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.906	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.536	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.743	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.344	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.302	1
Perfluorotetradecanoic Acid (PFTA)	0.492	J	ng/l	1.85	0.229	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.2	21.0	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.85	0.310	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.70	1.15	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-21  
 Client ID: EB-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 16:15  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.70	1.06	1
PFAS, Total (6)	ND		ng/l	1.85	0.208	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	103		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	122		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	72		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-22  
 Client ID: EB-05\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 16:20  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/01/21 16:55  
 Analyst: DV

Extraction Method: EPA 3510C  
 Extraction Date: 11/24/21 15:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.02	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
1-Methylnaphthalene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	61		15-120
4-Terphenyl-d14	66		41-149

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-23  
 Client ID: TB-04\_20211103  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/17/21 09:31  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 12/16/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.73	0.353	1
Perfluoropentanoic Acid (PFPeA)	0.485	J	ng/l	1.73	0.343	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.73	0.206	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.73	0.392	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.73	0.284	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.73	0.212	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.73	0.195	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.73	0.326	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.73	0.204	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.73	1.15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.73	0.596	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.73	0.270	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.73	0.436	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.73	0.263	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.73	1.05	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.73	0.970	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.73	0.561	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.73	0.225	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.73	0.849	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.73	0.502	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.73	0.696	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.73	0.322	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.73	0.283	1
Perfluorotetradecanoic Acid (PFTA)	0.381	J	ng/l	1.73	0.215	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.3	19.7	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.73	0.291	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.46	1.07	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-23  
 Client ID: TB-04\_20211103  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.46	0.994	1
PFAS, Total (6)	ND		ng/l	1.73	0.195	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	111		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	115		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	68		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-24  
 Client ID: TB-05\_20211103  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Water  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/17/21 09:48  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 12/16/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	0.408	J	ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.209	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.397	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.288	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.330	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.207	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.605	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.274	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.443	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.267	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.984	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.228	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.861	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.707	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	0.464	J	ng/l	1.76	0.218	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	43.9	20.0	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.76	0.295	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.52	1.09	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

Lab ID: L2164327-24  
 Client ID: TB-05\_20211103  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/03/21 16:10  
 Date Received: 11/19/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.52	1.01	1
PFAS, Total (6)	ND		ng/l	1.76	0.198	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	128		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	72		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 13:11  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1575152-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 13:11  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1575152-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		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)	148		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	192	Q	19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/30/21 11:37  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 07:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-04 Batch: WG1575152-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	122	Q	10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 12:19  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 06:18

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 18 Batch: WG1575373-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.292	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/27/21 12:19  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 06:18

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 18 Batch: WG1575373-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	130		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	120		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	125		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	96		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	40		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	126		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 11/30/21 13:40  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 11/24/21 06:18

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 18 Batch: WG1575373-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	82		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	57		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	61		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	56		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	54		10-187

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/24/21 18:48  
Analyst: WR

Extraction Method: EPA 3510C  
Extraction Date: 11/24/21 08:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 22 Batch: WG1575467-1					
Acenaphthene	ND		ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	0.02	J	ug/l	0.10	0.02
Naphthalene	ND		ug/l	0.10	0.05
Benzo(a)anthracene	0.03	J	ug/l	0.10	0.02
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(b)fluoranthene	0.02	J	ug/l	0.10	0.01
Benzo(k)fluoranthene	0.01	J	ug/l	0.10	0.01
Chrysene	0.01	J	ug/l	0.10	0.01
Acenaphthylene	0.04	J	ug/l	0.10	0.01
Anthracene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.10	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01
Indeno(1,2,3-cd)pyrene	0.02	J	ug/l	0.10	0.01
Pyrene	0.02	J	ug/l	0.10	0.02
1-Methylnaphthalene	ND		ug/l	0.10	0.02
2-Methylnaphthalene	ND		ug/l	0.10	0.02

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	27		23-120
2-Fluorobiphenyl	51		15-120
4-Terphenyl-d14	88		41-149

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/27/21 15:29  
Analyst: RP

Extraction Method: EPA 3546  
Extraction Date: 11/25/21 02:00

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02-04 Batch: WG1575805-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	64		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/28/21 13:03  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/26/21 23:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1576177-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	78		18-120



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/30/21 15:52  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/28/21 17:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 06-09 Batch: WG1576424-1					
Acenaphthene	ND		ug/kg	6.5	1.4
2-Chloronaphthalene	ND		ug/kg	6.5	0.84
Fluoranthene	ND		ug/kg	6.5	0.46
Naphthalene	ND		ug/kg	6.5	1.2
Benzo(a)anthracene	ND		ug/kg	6.5	0.62
Benzo(a)pyrene	ND		ug/kg	6.5	0.78
Benzo(b)fluoranthene	ND		ug/kg	6.5	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.5	0.58
Chrysene	ND		ug/kg	6.5	0.49
Acenaphthylene	ND		ug/kg	6.5	0.81
Anthracene	ND		ug/kg	6.5	0.52
Benzo(ghi)perylene	ND		ug/kg	6.5	0.55
Fluorene	ND		ug/kg	6.5	0.78
Phenanthrene	ND		ug/kg	6.5	0.55
Dibenzo(a,h)anthracene	ND		ug/kg	6.5	0.65
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.5	0.78
Pyrene	ND		ug/kg	6.5	0.46
1-Methylnaphthalene	ND		ug/kg	6.5	1.0
2-Methylnaphthalene	ND		ug/kg	6.5	1.8

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/04/21 14:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-17 Batch: WG1576515-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	0.072	J	ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/04/21 14:01  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 11/29/21 11:35

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-17 Batch: WG1576515-1					
Perfluorohexadecanoic Acid (PFHxDA)	0.126	J	ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		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)	151		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>158</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	164		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	102		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	120		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	37		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 11/30/21 15:52  
Analyst: DV

Extraction Method: EPA 3546  
Extraction Date: 11/29/21 16:21

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 11,13-14 Batch: WG1576793-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	0.52	J	ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	1.2	J	ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	0.85	J	ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	0.49	J	ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.52
Benzo(ghi)perylene	0.56	J	ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	0.46	J	ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	98		18-120





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/09/21 23:54  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 12/01/21 05:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 19,21 Batch: WG1577473-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.512	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.616	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/09/21 23:54  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 12/01/21 05:00

<b>Parameter</b>	<b>Result</b>	<b>Qualifier</b>	<b>Units</b>	<b>RL</b>	<b>MDL</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 19,21 Batch: WG1577473-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/09/21 23:54  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 12/01/21 05:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 19,21 Batch: WG1577473-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	130		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	74		10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	110		50-150

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/02/21 06:48  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 12/01/21 14:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 20 Batch: WG1577684-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.356	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/02/21 06:48  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 12/01/21 14:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 20 Batch: WG1577684-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	126		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEFOSAA)	105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	92		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	50		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/02/21 16:06  
 Analyst: DV

Extraction Method: EPA 3546  
 Extraction Date: 12/01/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 10,12,15-17 Batch: WG1577948-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.86
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.63
Benzo(a)pyrene	ND		ug/kg	6.6	0.80
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.63
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.60
Chrysene	ND		ug/kg	6.6	0.50
Acenaphthylene	ND		ug/kg	6.6	0.83
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.80
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.80
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	106		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/17/21 03:27  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 12/16/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 23-24 Batch: WG1584302-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.324	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/17/21 03:27  
Analyst: HT

Extraction Method: ALPHA 23528  
Extraction Date: 12/16/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 23-24 Batch: WG1584302-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15
PFAS, Total (6)	ND		ng/l	2.00	0.225

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	119		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	109		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	85		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/19/21 12:23  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 12/16/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 23-24 Batch: WG1584302-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		10-112

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1575152-2								
Perfluorobutanoic Acid (PFBA)	93		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	92		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	89		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	88		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	93		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	94		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	98		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	101		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	85		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	96		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	94		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	95		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	75		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	91		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	92		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	104		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	87		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	114		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	94		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1575152-2								
Perfluorotridecanoic Acid (PFTrDA)	105		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	87		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	69		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	94		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	86		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	22		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1575152-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	157				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	154				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>207</b>	Q			19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	83				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	124				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	49				10-145

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 Batch: WG1575152-2								
Perfluorooctanesulfonamide (FOSA)	107		-		67-137	-		30

<b>Surrogate (Extracted Internal Standard)</b>	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	118	Q			10-117



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 Batch: WG1575373-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	97		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	95		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	114		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	96		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	99		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	97		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	102		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	99		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	118		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	93		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	105		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	97		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	94		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	93		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	84		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	92		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	94		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164327

**Report Date:** 12/29/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 Batch: WG1575373-2								
Perfluorotridecanoic Acid (PFTrDA)	116		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	101		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	89		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	102		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	91		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	58		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
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**Lab Number:** L2164327  
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Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 Batch: WG1575373-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	90				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	124				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	42				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	108				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	45				10-206



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 Batch: WG1575373-2								
Perfluorooctanesulfonamide (FOSA)	106		-		46-170	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	73				10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	52				10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	56				10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	51				10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	50				10-187



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 22 Batch: WG1575467-2 WG1575467-3								
Acenaphthene	50		54		40-140	8		40
2-Chloronaphthalene	47		48		40-140	2		40
Fluoranthene	82		91		40-140	10		40
Naphthalene	30	Q	25	Q	40-140	18		40
Benzo(a)anthracene	81		90		40-140	11		40
Benzo(a)pyrene	86		98		40-140	13		40
Benzo(b)fluoranthene	85		101		40-140	17		40
Benzo(k)fluoranthene	82		89		40-140	8		40
Chrysene	76		86		40-140	12		40
Acenaphthylene	57		60		40-140	5		40
Anthracene	68		76		40-140	11		40
Benzo(ghi)perylene	80		93		40-140	15		40
Fluorene	60		66		40-140	10		40
Phenanthrene	66		74		40-140	11		40
Dibenzo(a,h)anthracene	88		105		40-140	18		40
Indeno(1,2,3-cd)pyrene	97		110		40-140	13		40
Pyrene	82		91		40-140	10		40
1-Methylnaphthalene	42		40		40-140	5		40
2-Methylnaphthalene	44		41		40-140	7		40

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 22 Batch: WG1575467-2 WG1575467-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	26		21	Q	23-120
2-Fluorobiphenyl	49		49		15-120
4-Terphenyl-d14	84		92		41-149

## Lab Control Sample Analysis

### Batch Quality Control

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-04 Batch: WG1575805-2 WG1575805-3								
Acenaphthene	68		78		40-140	14		50
2-Chloronaphthalene	67		78		40-140	15		50
Fluoranthene	75		85		40-140	13		50
Naphthalene	64		76		40-140	17		50
Benzo(a)anthracene	78		90		40-140	14		50
Benzo(a)pyrene	77		89		40-140	14		50
Benzo(b)fluoranthene	72		87		40-140	19		50
Benzo(k)fluoranthene	76		84		40-140	10		50
Chrysene	64		72		40-140	12		50
Acenaphthylene	73		83		40-140	13		50
Anthracene	71		81		40-140	13		50
Benzo(ghi)perylene	75		87		40-140	15		50
Fluorene	71		81		40-140	13		50
Phenanthrene	68		76		40-140	11		50
Dibenzo(a,h)anthracene	82		95		40-140	15		50
Indeno(1,2,3-cd)pyrene	77		91		40-140	17		50
Pyrene	76		86		35-142	12		50
1-Methylnaphthalene	68		79		40-140	15		50
2-Methylnaphthalene	65		77		40-140	17		50

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-04 Batch: WG1575805-2 WG1575805-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	69		86		23-120
2-Fluorobiphenyl	60		72		30-120
4-Terphenyl-d14	68		80		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

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Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1576177-2 WG1576177-3								
Acenaphthene	65		74		40-140	13		50
2-Chloronaphthalene	66		74		40-140	11		50
Fluoranthene	74		83		40-140	11		50
Naphthalene	64		72		40-140	12		50
Benzo(a)anthracene	69		76		40-140	10		50
Benzo(a)pyrene	71		80		40-140	12		50
Benzo(b)fluoranthene	66		74		40-140	11		50
Benzo(k)fluoranthene	69		70		40-140	1		50
Chrysene	63		71		40-140	12		50
Acenaphthylene	70		79		40-140	12		50
Anthracene	70		78		40-140	11		50
Benzo(ghi)perylene	70		78		40-140	11		50
Fluorene	67		76		40-140	13		50
Phenanthrene	65		73		40-140	12		50
Dibenzo(a,h)anthracene	76		85		40-140	11		50
Indeno(1,2,3-cd)pyrene	73		81		40-140	10		50
Pyrene	73		83		35-142	13		50
1-Methylnaphthalene	68		75		40-140	10		50
2-Methylnaphthalene	64		73		40-140	13		50

## Lab Control Sample Analysis

### Batch Quality Control

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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1576177-2 WG1576177-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> <i>Criteria</i>
Nitrobenzene-d5	67		75		23-120
2-Fluorobiphenyl	63		70		30-120
4-Terphenyl-d14	67		76		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
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Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 06-09 Batch: WG1576424-2 WG1576424-3								
Acenaphthene	82		89		40-140	8		50
2-Chloronaphthalene	84		87		40-140	4		50
Fluoranthene	93		103		40-140	10		50
Naphthalene	80		84		40-140	5		50
Benzo(a)anthracene	85		94		40-140	10		50
Benzo(a)pyrene	91		98		40-140	7		50
Benzo(b)fluoranthene	84		99		40-140	16		50
Benzo(k)fluoranthene	94		90		40-140	4		50
Chrysene	81		84		40-140	4		50
Acenaphthylene	91		96		40-140	5		50
Anthracene	88		94		40-140	7		50
Benzo(ghi)perylene	90		98		40-140	9		50
Fluorene	87		93		40-140	7		50
Phenanthrene	82		88		40-140	7		50
Dibenzo(a,h)anthracene	98		107		40-140	9		50
Indeno(1,2,3-cd)pyrene	95		99		40-140	4		50
Pyrene	92		101		35-142	9		50
1-Methylnaphthalene	85		88		40-140	3		50
2-Methylnaphthalene	82		85		40-140	4		50



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 06-09 Batch: WG1576424-2 WG1576424-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	89		90		23-120
2-Fluorobiphenyl	83		85		30-120
4-Terphenyl-d14	88		93		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
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Parameter	LCS	Qual	LCSD	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 Batch: WG1576515-2								
Perfluorobutanoic Acid (PFBA)	98		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	100		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	103		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	98		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	105		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	99		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	115		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	93		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	103		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	98		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	101		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	92		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	114		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	94		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	95		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		69-135	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 Batch: WG1576515-2								
Perfluorotridecanoic Acid (PFTrDA)	124		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	107		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	106		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	101		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	99		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	29		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 Batch: WG1576515-2								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	150				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	158				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	112				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	89				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	44				10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 11,13-14 Batch: WG1576793-2 WG1576793-3								
Acenaphthene	90		94		40-140	4		50
2-Chloronaphthalene	90		94		40-140	4		50
Fluoranthene	96		98		40-140	2		50
Naphthalene	87		129		40-140	39		50
Benzo(a)anthracene	108		115		40-140	6		50
Benzo(a)pyrene	105		110		40-140	5		50
Benzo(b)fluoranthene	101		107		40-140	6		50
Benzo(k)fluoranthene	94		98		40-140	4		50
Chrysene	85		88		40-140	3		50
Acenaphthylene	97		101		40-140	4		50
Anthracene	94		99		40-140	5		50
Benzo(ghi)perylene	101		105		40-140	4		50
Fluorene	93		98		40-140	5		50
Phenanthrene	88		93		40-140	6		50
Dibenzo(a,h)anthracene	112		118		40-140	5		50
Indeno(1,2,3-cd)pyrene	112		115		40-140	3		50
Pyrene	95		98		35-142	3		50
1-Methylnaphthalene	91		122		40-140	29		50
2-Methylnaphthalene	89		156	Q	40-140	55	Q	50

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 11,13-14 Batch: WG1576793-2 WG1576793-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	104		106		23-120
2-Fluorobiphenyl	85		87		30-120
4-Terphenyl-d14	88		90		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 Batch: WG1577473-2								
Perfluorobutanoic Acid (PFBA)	97		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	100		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	96		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	103		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	98		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	98		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	111		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	97		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	99		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	100		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	101		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	99		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	102		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	93		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	96		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	102		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	94		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	105		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	104		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2164327

**Report Date:** 12/29/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 Batch: WG1577473-2								
Perfluorotridecanoic Acid (PFTrDA)	115		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	102		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	104		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	95		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	101		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	72		-		10-119	-		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 Batch: WG1577473-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	93				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	108				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	75				10-206
1H,1H,2H,2H-Perfluorododecane Sulfonate (M2D4-10:2FTS)	109				50-150

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS	Qual	LCSD	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 Batch: WG1577684-2								
Perfluorobutanoic Acid (PFBA)	99		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	101		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	95		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	107		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	99		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	109		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	100		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	120		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	94		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	105		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	100		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	105		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	95		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	88		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	86		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 Batch: WG1577684-2								
Perfluorotridecanoic Acid (PFTrDA)	117		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	103		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	94		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	104		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	102		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	82		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 Batch: WG1577684-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	146	Q			12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	148	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	175	Q			10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	110				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	118				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	54				10-206

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10,12,15-17 Batch: WG1577948-2 WG1577948-3								
Acenaphthene	107		102		40-140	5		50
2-Chloronaphthalene	106		100		40-140	6		50
Fluoranthene	121		115		40-140	5		50
Naphthalene	102		97		40-140	5		50
Benzo(a)anthracene	131		120		40-140	9		50
Benzo(a)pyrene	126		119		40-140	6		50
Benzo(b)fluoranthene	124		116		40-140	7		50
Benzo(k)fluoranthene	110		108		40-140	2		50
Chrysene	101		96		40-140	5		50
Acenaphthylene	115		108		40-140	6		50
Anthracene	116		109		40-140	6		50
Benzo(ghi)perylene	122		116		40-140	5		50
Fluorene	112		106		40-140	6		50
Phenanthrene	108		103		40-140	5		50
Dibenzo(a,h)anthracene	136		130		40-140	5		50
Indeno(1,2,3-cd)pyrene	134		129		40-140	4		50
Pyrene	122		115		35-142	6		50
1-Methylnaphthalene	107		102		40-140	5		50
2-Methylnaphthalene	104		99		40-140	5		50

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 10,12,15-17 Batch: WG1577948-2 WG1577948-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	117		111		23-120
2-Fluorobiphenyl	116		92		30-120
4-Terphenyl-d14	112		105		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 Batch: WG1584302-2								
Perfluorobutanoic Acid (PFBA)	99		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	96		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	98		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	101		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	100		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	97		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	98		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	112		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	101		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	107		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	96		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	117		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	103		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	109		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	112		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	101		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	101		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	107		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	101		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	97		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	98		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 Batch: WG1584302-2								
Perfluorotridecanoic Acid (PFTrDA)	114		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	104		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	98		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	100		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	97		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	32		-		10-119	-		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2164327

Project Number: 5060.00

Report Date: 12/29/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 Batch: WG1584302-2								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	115				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	96				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	108				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	91				10-206

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
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<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 Batch: WG1584302-2								
Perfluorooctanesulfonamide (FOSA)	112		-		46-170	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62				10-112

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	0.327J	8.28	7.88	91		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.159J	8.28	7.61	90		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	7.35	6.36	87		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	7.74	7.20	93		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.183J	8.28	7.57	89		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	7.78	6.53	84		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.246J	8.28	8.24	97		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	7.56	7.22	96		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.594F	8.28	8.03	90		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	7.88	8.02	102		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	7.88	6.77	86		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.246J	8.28	8.35	98		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.792	7.68	8.21	97		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	8.28	8.62	104		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	7.94	6.61	83		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	7.96	7.42	93		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	8.28	7.00	85		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	8.28	8.05	97		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	7.98	8.62	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	8.28	6.93F	84		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	8.28	14.3F	173	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	8.28	7.86	95		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	8.28	8.80	106		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	8.28	7.04	85		-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	80.7	84.5F	105		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	7.81	5.85	75		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	8.28	6.80	82		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	8.28	1.98J	24		-	-		10-123	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	142				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130				20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	43				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	19	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	34				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	65				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	52	Q			75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	43	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	45	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	46				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	20				10-145

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-3 QC Sample: L2164267-21 Client ID: MS Sample

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	45	Q			61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	56	Q			58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	49	Q			75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	51	Q			72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84				74-139

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

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<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 QC Batch ID: WG1575373-3 QC Sample: L2163524-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	33.8	38.9	70.4	94		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	32.8	38.9	70.1	96		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	2.86	34.6	35.3	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.4	36.2	99		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	52.4	38.9	91.1	99		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	2.65	36.6	38.1	97		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	59.8	38.9	100	103		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	20.7F	35.6	58.9	107		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	305	38.9	359	139		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.41	37	48.6	122		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	1.43J	37	36.2	94		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	5.74	38.9	41.1	91		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	31.6	36.1	69.1	104		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.291J	38.9	38.0	97		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.4	42.8	115		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.4	31.9	85		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.69JF	38.9	44.9	111		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.9	38.1	98		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37.5	30.5	81		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.9	38.2	98		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	16.8	38.9	63.3	119		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.9	41.6	107		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 QC Batch ID: WG1575373-3 QC Sample: L2163524-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	38.9	48.8	125		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.259J	38.9	40.2	103		-	-		59-182	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	344	Q			10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	430	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	490	Q			14-147
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUADA)	71				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	62				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	42				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	86				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87				70-131

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	0.626	5.69	6.24	99		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	1.29	5.69	7.03	101		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	5.05	4.75	94		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.32	5.75	108		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.35	5.69	6.81	96		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.35	5.65	106		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	3.18	5.69	8.87	100		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.2	5.61	108		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	17.0	5.69	23.4	113		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.46	5.41	7.52	112		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.362J	5.41	8.91	158	Q	-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	7.39	5.69	13.2	102		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	295E	5.28	312E	322	Q	-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	59.9	5.69	65.6	100		-	-		69-133	-		30
Perfluorononanesulfonic Acid (PFNS)	0.493J	5.47	9.64	167	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.38	5.69	7.45	107		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	29.5	5.69	35.6	107		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.30	5.48	9.98	158	Q	-	-		59-134	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	705E	5.69	738E	580	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	75.3	5.69	80.4	90		-	-		69-135	-		30
Perfluorotridecanoic Acid (PFTrDA)	24.6	5.69	37.4	225	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	33.7	5.69	40.8	125		-	-		69-133	-		30



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID: MS Sample												
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	55.4	59.8	108		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	5.37	5.68	106		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	10.6	5.69	17.0	113		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	1.41J	5.69	4.69F	58		-	-		10-123	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	247	Q			14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	258	Q			20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67				34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83				75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	161	Q			78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q			54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	39				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	34				10-145
Perfluoro[13C4]Butanoic Acid (MPFBA)	77				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79				58-150
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				75-130

**Matrix Spike Analysis**  
*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-3 QC Sample: L2163946-01 Client ID: MS Sample												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS</b>		<b>MSD</b>		<b>Acceptance Criteria</b>
	<b>% Recovery</b>	<b>Qualifier</b>	<b>% Recovery</b>	<b>Qualifier</b>	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	159	Q			74-139



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-3 QC Sample: L2163925-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.3	34.6	95		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.658J	36.3	35.6	96		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.2	30.0	93		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34	34.9	103		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.3	33.9	93		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.1	34.6	101		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.3	35.0	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.2	34.0	103		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.3	34.1	94		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	34.5	32.5	94		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	34.5	33.1	96		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.3	34.9	96		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	33.7	33.6	100		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.3	35.0	96		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	34.8	36.6	105		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	34.9	35.8	103		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.3	35.1	97		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.3	34.0	94		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35	37.0	106		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.3	33.2	92		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.3	35.8	99		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.3	34.9	96		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-3 QC Sample: L2163925-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	36.3	40.6	112		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.477J	36.3	37.2	101		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	354	264	75		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.2	29.5	86		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.3	35.9	99		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.3	23.3	64		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	91				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	79				10-206

### Matrix Spike Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-3 QC Sample: L2163925-01 Client ID: MS Sample												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	70				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95				70-131



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-3 QC Sample: L2164252-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.8	39.1	106		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.391J	36.8	39.8	107		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.6	33.3	102		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.4	38.5	112		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.8	38.4	104		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	38.9	113		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.8	39.4	107		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.6	39.0	116		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.8	40.6	110		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35	43.5	124		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35	35.5	101		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.8	38.1	104		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	10.6	34.1	42.1	92		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.8	38.9	106		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.3	43.7	124		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.4	35.1	99		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.8	39.5	107		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.8	36.8	100		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.4	35.4	100		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.8	35.9	98		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.8	37.7	103		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.8	39.2	107		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-3 QC Sample: L2164252-01 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	36.8	48.6	132		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.240JF	36.8	39.6	107		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	358	326	91		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.7	38.3	110		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.8	39.1	106		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.8	34.9	95		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	135				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>128</b>	Q			27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57				10-206

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-3 QC Sample: L2164252-01 Client ID: MS Sample

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	85				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94				70-131



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-3 QC Sample: L2167737-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	36.7	39.3	107		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.683J	36.7	39.4	105		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	32.6	35.6	109		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.4	38.4	112		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	36.7	39.9	109		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.5	38.9	113		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	36.7	40.0	109		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	33.6	40.6	121		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	36.7	39.6	108		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35	39.2	112		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35	39.3	112		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	36.7	40.1	109		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	34.1	40.8	120		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	36.7	39.7	108		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.2	46.7	133		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	35.3	40.4	114		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.7	42.2	115		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	36.7	40.4	110		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	35.4	38.0	107		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	36.7	42.1F	115		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.7	39.4	107		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	36.7	39.4	107		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2164327

**Project Number:** 5060.00

**Report Date:** 12/29/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-3 QC Sample: L2167737-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTTrDA)	ND	36.7	44.2	120		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.228J	36.7	43.5	118		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	358	381	106		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.6	37.9	109		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.7	40.8	111		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	36.7	11.8	32		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	109				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	90				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57				10-206

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-3 QC Sample: L2167737-02 Client ID: MS Sample												

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS</b>		<b>MSD</b>		<b>Acceptance Criteria</b>
	<b>% Recovery</b>	<b>Qualifier</b>	<b>% Recovery</b>	<b>Qualifier</b>	
Perfluoro[13C4]Butanoic Acid (MPFBA)	82				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81				70-131

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164327

Report Date: 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.293J	0.264J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.298J	0.234J	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)	0.276JF	0.253JF	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)	1.68F	1.77	ng/g	5		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)	0.907J	0.795JF	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.14F	2.77F	ng/g	13		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)	ND	ND	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		64		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		61		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		88		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>456</b>	Q	<b>427</b>	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>56</b>	Q	<b>42</b>	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	<b>54</b>	Q	<b>37</b>	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		91		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>53</b>	Q	<b>33</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>540</b>	Q	<b>513</b>	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>48</b>	Q	<b>33</b>	Q	72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		101		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>47</b>	Q	<b>30</b>	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>920</b>	Q	<b>812</b>	Q	19-175

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1575152-4 QC Sample: L2164267-22 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		61		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	57	Q	39	Q	61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		5	Q	10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		78		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		41	Q	54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		48		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		43		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	39		32		10-145

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 QC Batch ID: WG1575373-4 QC Sample: L2163524-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	68.8	69.3	ng/l	1		30
Perfluoropentanoic Acid (PFPeA)	43.1	43.6	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	4.82	4.79	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	82.7	84.0	ng/l	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	3.33	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	83.7	84.6	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	33.9F	32.2F	ng/l	5		30
Perfluorooctanoic Acid (PFOA)	418	436	ng/l	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.53	3.96	ng/l	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.72J	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	6.98	7.50	ng/l	7		30
Perfluorooctanesulfonic Acid (PFOS)	39.7	42.6	ng/l	7		30
Perfluorodecanoic Acid (PFDA)	0.345J	0.364J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.928J	1.46JF	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 QC Batch ID: WG1575373-4 QC Sample: L2163524-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	12.6	18.2	ng/l	36	Q	30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.320J	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		94		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		69		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		89		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	354	Q	362	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		65		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	537	Q	549	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		91		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		76		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	434	Q	427	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	137	Q	122	Q	24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		80		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		32		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	130	Q	107		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		58		48-131



**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18 QC Batch ID: WG1575373-4 QC Sample: L2163524-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		44		22-136



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-4 QC Sample: L2163946-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	0.295J	0.327J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.622J	0.656J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.079J	0.103J	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.674J	0.708	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.663	0.699	ng/g	5		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	2.05	2.23	ng/g	8		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)	1.32	1.42	ng/g	7		30
Perfluorooctanesulfonic Acid (PFOS)	1.38	1.43	ng/g	4		30
Perfluorodecanoic Acid (PFDA)	1.85	2.07	ng/g	11		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)	0.657J	0.745	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-4 QC Sample: L2163946-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.77	1.25F	ng/g	34	Q	30
Perfluorododecanoic Acid (PFDoA)	0.576J	0.632JF	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.293J	0.284J	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	0.248J	0.204JF	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		81		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		80		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		93		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	145		172	Q	14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		81		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		86		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		94		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		83		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		158	Q	20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		87		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		92		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129		165		19-175

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-17 QC Batch ID: WG1576515-4 QC Sample: L2163946-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		67		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		82		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		16		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		63		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		57		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	35		31		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		84		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	22		17		10-145

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-4 QC Sample: L2163925-02 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.591J	0.828J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.81F	25.5	ng/l	148	Q	30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-4 QC Sample: L2163925-02 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.450J	0.604J	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		75		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		101		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		81		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		81		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		86		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		95		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		80		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		95		10-162

**Lab Duplicate Analysis**  
Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 19,21 QC Batch ID: WG1577473-4 QC Sample: L2163925-02 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		88		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		89		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		24		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		88		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82		67		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	103		113		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	77		67		10-206

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164327

Report Date: 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-4 QC Sample: L2164254-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.544J	0.832J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	2.06	7.37	ng/l	113	Q	30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-4 QC Sample: L2164254-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.281J	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		92		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		95		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121		117		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	137		126		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		96		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	141		132		10-162

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 20 QC Batch ID: WG1577684-4 QC Sample: L2164254-01 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		109		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		92		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		20		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	119		110		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		58		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	97		96		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	53		54		10-206

## Lab Duplicate Analysis

Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Project Number: 5060.00

Lab Number: L2164327

Report Date: 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-4 QC Sample: L2167737-03 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	0.711J	0.665J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-4 QC Sample: L2167737-03 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.284J	0.377J	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		82		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		61		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		75		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		77		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		83		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		78		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		72		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		78		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		85		10-162

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 23-24 QC Batch ID: WG1584302-4 QC Sample: L2167737-03 Client ID: DUP Sample						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		86		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		78		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		68		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	109		103		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	53		55		10-206

# **INORGANICS & MISCELLANEOUS**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-01  
**Client ID:** AR-01\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 13:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.92		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.97		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.95		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.3		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-02  
**Client ID:** AR-02\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 16:30  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.78		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.97		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.88		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	71.7		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-03  
**Client ID:** AR-03\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 15:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.71		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	3.56		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	3.14		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	62.6		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-04  
**Client ID:** AR-04\_20211115  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/15/21 16:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.06		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.25		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.15		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-06  
**Client ID:** PE-02\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 15:30  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.25		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.06		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.16		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-07  
**Client ID:** PE-03\_20211119  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/19/21 09:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.71		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.83		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.77		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.3		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-08  
**Client ID:** PE-04\_20211117  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 13:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	4.11		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	4.65		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	4.38		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.7		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-09  
**Client ID:** PE-02\_20211117\_DUP  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/17/21 15:35  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.04		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	2.18		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	2.11		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-10  
**Client ID:** HA-01\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 18:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	1.59		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	1.45		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	1.52		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-11  
**Client ID:** HA-02\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 08:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	0.645		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	0.621		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	0.633		%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI





**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-12  
**Client ID:** HA-03\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 17:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.80		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	3.07		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	3.44		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.8		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-13  
**Client ID:** HA-04\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 09:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	9.76		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	8.85		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	9.31		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.3		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-14  
**Client ID:** WS-01\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 10:05  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.32		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	3.58		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	3.45		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-15  
**Client ID:** WS-02\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 13:20  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	6.28		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	6.48		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	6.38		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	60.1		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-16  
**Client ID:** WS-03\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 12:15  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	6.07		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	5.87		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	5.97		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.5		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**SAMPLE RESULTS**

**Lab ID:** L2164327-17  
**Client ID:** WS-04\_20211118  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/18/21 15:00  
**Date Received:** 11/19/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	3.46		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	3.20		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	3.33		%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.6		%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab for sample(s): 01-04 Batch: WG1576674-1</b>									
Total Organic Carbon (Rep1)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>Total Organic Carbon - Mansfield Lab for sample(s): 06-11 Batch: WG1577089-1</b>									
Total Organic Carbon (Rep1)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Rep2)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
Total Organic Carbon (Average)	ND	%	0.050	0.050	1	-	11/29/21 09:55	13,-	SP
<b>Total Organic Carbon - Mansfield Lab for sample(s): 12-17 Batch: WG1577222-1</b>									
Total Organic Carbon (Rep1)	ND	%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Rep2)	ND	%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
Total Organic Carbon (Average)	ND	%	0.050	0.050	1	-	11/29/21 17:00	13,-	SP
<b>General Chemistry - Westborough Lab for sample(s): 01-04,06-17 Batch: WG1577646-2</b>									
Solids, Total	99.8	%	0.100	NA	1	-	12/01/21 12:42	121,2540G	RI



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
<b>Total Organic Carbon - Mansfield Lab Associated sample(s): 01-04 Batch: WG1576674-2</b>								
Total Organic Carbon (Rep1)	108		-		75-125	-		25
Total Organic Carbon (Rep2)	106		-		75-125	-		25
Total Organic Carbon (Average)	107		-		75-125	-		25
<b>Total Organic Carbon - Mansfield Lab Associated sample(s): 06-11 Batch: WG1577089-2</b>								
Total Organic Carbon (Rep1)	108		-		75-125	-		25
Total Organic Carbon (Rep2)	99		-		75-125	-		25
Total Organic Carbon (Average)	104		-		75-125	-		25
<b>Total Organic Carbon - Mansfield Lab Associated sample(s): 12-17 Batch: WG1577222-2</b>								
Total Organic Carbon (Rep1)	102		-		75-125	-		25
Total Organic Carbon (Rep2)	109		-		75-125	-		25
Total Organic Carbon (Average)	105		-		75-125	-		25



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1576674-4 QC Sample: L2164267-06 Client ID: MS Sample												
Total Organic Carbon (Rep1)	1.44	1.08	2.74	121		-	-		75-125	-		25
Total Organic Carbon (Rep2)	1.91	1.18	2.63	61	Q	-	-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 06-11 QC Batch ID: WG1577089-4 QC Sample: L2164327-07 Client ID: PE-03_20211119												
Total Organic Carbon (Rep1)	2.71	0.561	2.63	0	Q	-	-		75-125	-		25
Total Organic Carbon (Rep2)	2.83	1.24	5.08	181	Q	-	-		75-125	-		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 12-17 QC Batch ID: WG1577222-4 QC Sample: L2164267-28 Client ID: MS Sample												
Total Organic Carbon (Rep1)	3.53	0.96	3.95	44	Q	-	-		75-125	-		25
Total Organic Carbon (Rep2)	3.40	1.14	4.77	120		-	-		75-125	-		25

## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2164327  
**Report Date:** 12/29/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG1576674-3 QC Sample: L2164267-06 Client ID: DUP Sample						
Total Organic Carbon (Rep1)	1.44	1.41	%	2		25
Total Organic Carbon (Rep2)	1.91	1.36	%	34	Q	25
Total Organic Carbon (Average)	1.68	1.39	%	19		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 06-11 QC Batch ID: WG1577089-3 QC Sample: L2164327-07 Client ID: PE-03_20211119						
Total Organic Carbon (Rep1)	2.71	3.66	%	30	Q	25
Total Organic Carbon (Rep2)	2.83	2.52	%	12		25
Total Organic Carbon (Average)	2.77	3.09	%	11		25
Total Organic Carbon - Mansfield Lab Associated sample(s): 12-17 QC Batch ID: WG1577222-3 QC Sample: L2164267-28 Client ID: DUP Sample						
Total Organic Carbon (Rep1)	3.53	3.26	%	8		25
Total Organic Carbon (Rep2)	3.40	3.12	%	9		25
Total Organic Carbon (Average)	3.46	3.19	%	8		25
General Chemistry - Westborough Lab Associated sample(s): 01-04,06-17 QC Batch ID: WG1577646-1 QC Sample: L2164327-01 Client ID: AR-01_20211115						
Solids, Total	77.3	76.5	%	1		20

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164327**Project Number:** 5060.00**Report Date:** 12/29/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
C	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164327-01A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-01B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-01C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-02A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-02B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-02C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-03A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-03B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-03C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-04A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-04B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-04C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-05A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		CANCELLED()
L2164327-05B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		CANCELLED()
L2164327-05C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		CANCELLED()
L2164327-06A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-06B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-06C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-07A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-07B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-07C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-08A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164327**Project Number:** 5060.00**Report Date:** 12/29/21**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164327-08B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-08C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-09A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-09B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-09C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-10A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-10B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-10C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-11A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-11B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-11C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-12A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-12B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-12C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-13A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-13B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		ME-TS-2540(7)
L2164327-13C	Glass 250ml/8oz unpreserved	A	NA		3.2	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-14A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-14B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-14C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-15A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-15B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-15C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-16A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-16B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)
L2164327-16C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-17A	Plastic 8oz unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-17B	Plastic 2oz unpreserved for TS	C	NA		5.5	Y	Absent		ME-TS-2540(7)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2164327**Project Number:** 5060.00**Report Date:** 12/29/21**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2164327-17C	Glass 250ml/8oz unpreserved	C	NA		5.5	Y	Absent		PAHTCL-SIM(14),A2-TOC-LK-2REPS(14)
L2164327-18A	Plastic 250ml unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-18B	Plastic 250ml unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-18C	Plastic 250ml unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-19A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-20A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-21A	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-21B	Plastic 250ml unpreserved	A	NA		3.2	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-22A	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PAHTCL-SIM-LVI(7)
L2164327-22B	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PAHTCL-SIM-LVI(7)
L2164327-23A	Plastic 250ml unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)
L2164327-24A	Plastic 250ml unpreserved	C	NA		5.5	Y	Absent		A2-ME-537ISOTOPE-28+(14)

**PFAS PARAMETER SUMMARY**

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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

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## 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



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#### 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





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**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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 13 Determination of Total Organic Carbon in Sediment. U.S. EPA, Region II. July 27, 1988.
- 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.



## Certification Information

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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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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

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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, **LCHAT 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**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab: 11/20/21

ALPHA Job #: REM02 64327

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

## ANALYSIS

PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids																
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
-18	Trip Blank	11/3	16:10	Water	Dyl
	Trip Blank	11/3	16:10	Water	Dyl
	Trip Blank	11/3	16:10	Water	Dyl
-19	Field Blank	11/17	16:25	AQ	ASN
-20	Field Blank	11/18	9:12	AQ	ASN
-21	Equipment Blank	11/17	16:15	Water	ASN
-22	Equipment Blank	11/17	16:20	Water	ASN


AKC - Acc 11/20/21 0545

Container Type	P	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
Hunny B...	11/19/21 14:00	Hunny B...	11/19/21 14:00
Joe...	11/19/21 15:30	Joe...	11/19/21 15:30
R. Roakes	11/19/21 21:05	R. Roakes	11/19/21 21:05
Alamy...	11/20/21 3:15	Alamy...	11/20/21 3:15

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

AKC 11/20/21 0545



**CHAIN OF CUSTODY**

Westborough, MA    Mansfield, MA  
 TEL 508-898-8220    TEL 508-822-8300  
 FAX 508-898-8140    FAX 508-822-5288

PAGE 1 OF 3

**Project Information**

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project # 5060 00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote # Maine DEP REM02

**Client Information**

Client: Sanborn Head & Associates for SOM

Address: 20 Foundry Street  
 Concord, NH 03301

Phone: 603-229-1900  
 Fax: 603-229-1519  
 Email: hroakes@sanbornhead.com

These samples have been previously analyzed by Alpha

**Turn-Around Time**

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Other Project Specific Requirements/Comments/Detection Limits:**

Invoice the State of Maine: REM02, Troy T Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

**Regulatory Requirements/Report Limits**

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

**Report Information**

FAX     EMAIL     Same as Client info    PO # **REM02**

ADEx     Add'l Deliverables

**ALPHA Job #: REM02**

**ANALYSIS**

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	SAMPLE HANDLING										TOTAL # BOTTLES				
		Date	Time							Filtration	Dose	Not Needed	Let to dry	Preservation	Let to dry	(Please specify below)								
64327-01	AR-01_20211115	11/15	13:00	SL	AJN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	
-02	AR-02_20211115	11/15	16:30			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-03	AR-03_20211115	11/15	15:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-04	AR-04_20211115	11/15	16:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-05	PE-01_20211117	11/17	12:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-06	PE-02_20211117	11/17	15:30			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-07	PE-03_20211119	11/19	9:20			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-08	PE-04_20211117	11/17	13:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-09	PE-02_20211117_DUP	11/17	15:35			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

**Container Type**    P    G    P    P

**Preservative**    0    0    0    0

Requisitioned By: *Henny Bailey*    Date/Time: 11/19/21 14:00

Received By: *Henny Bailey*    Date/Time: 11/19/21 14:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 3

## Project Information

Westborough, MA  
 TEL 508-898-9220  
 FAX 508-898-9193

Manfield, MA  
 TEL 508-822-9300  
 FAX 508-822-3288

Project Name: Maine Background Soils Study

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Date Rec'd in Lab:

ALPHA Job #: REM02

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS


ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PFAS: 537 Isotope Dilution -28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids	SAMPLE HANDLING										TOTAL BOTTLES			
		Date	Time							Filtration	Done	Not Needed	Lab to do	Preservation	Lab to do	(Please specify below)	Sample Specific Comments						
64327-10	HA-01_20211118	11/18	18:00	SL	ATN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
-11	HA-02_20211118	11/18	8:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-12	HA-03_20211118	11/18	17:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-13	HA-04_20211118	11/18	9:00			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-14	WS-01_20211118	11/18	10:05			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-15	WS-02_20211118	11/18	13:20			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-16	WS-03_20211118	11/18	12:15			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-17	WS-04_20211118	11/18	15:00			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Container Type  
 Preservative

Relinquished By: *Hunny Bapley* Date/Time: 11/19/21 14:00  
 Received By: *Hunny Bapley* Date/Time: 11/18/21 14:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 3 OF 3

ALPHA Job #: REM02

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**Project Information**

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

**Turn-Around Time**

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Other Project Specific Requirements/Comments/Detection Limits:  
 Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

**Report Information**

FAX  EMAIL

ADEx  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

**Billing Information**

Same as Client info  PO #: REM02

---

**Client Information**

Westborough, MA    Mansfield, MA  
 TEL 508-898-9220    TEL 508-822-9300  
 FAX 508-898-9193    FAX 508-822-3288

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street  
 Concord, NH 03301

Phone: 603-229-1900  
 Fax: 603-229-1919  
 Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

**ANALYSIS**

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PFAS: 537 Isotope Dilution - 28 List	PAHs: Method 8270 - 19 compounds	TOC: Lloyd Kahn	Percent Solids											TOTAL # BOTTLES					
		Date	Time																						
64327-18	TB-03_20211103	11/3	16:10	Water	Dyl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-23	TB-04_20211103	11/3	16:10	Water	Dyl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-24	TB-05_20211103	11/3	16:10	Water	Dyl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-19	FB-04_20211117	11/17	16:25	AQ	ASN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-20	FB-05_20211118	11/18	9:12	AQ	ASN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-21	EB-04_20211117	11/17	16:15	Water	ASN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-22	EB-05_20211117	11/17	16:20	Water	ASN	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

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Container Type: P G - - - - -

Preservative: O O - - - - -

Relinquished By: Hunny Barley Date/Time: 11/19/21 14:20

Received By: Hunny Barley Date/Time: 11/19/21

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**Alpha Analytical Laboratories, Inc.**  
**L2166673**



## ANALYTICAL REPORT

Lab Number:	L2166673
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	12/27/21

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-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2166673-01	PE-01_12032021	SOIL	VARIOUS, MAINE	12/03/21 11:59	12/03/21

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

### 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.

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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

### 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

L2166673-01, WG1580042-3 and WG1580042-4: Sample results for Perfluorohexanesulfonic Acid (PFHxS), Perfluorooctanoic Acid (PFOA), Perfluorooctanesulfonic Acid (PFOS), N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA), and N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA) are reported as the sum of the branched and linear isomers.

L2166673-01, WG1580042-3 and WG1580042-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

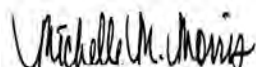
#### Total Organic Carbon

WG1582133: The required batch QC was prepared; however, the native sample required a different reporting method; therefore, the associated QC results could not be reported.

The WG1582133-3 Laboratory Duplicate RPD for total organic carbon (rep1) (35%), performed on L2166673-01, is outside the acceptance criteria of 25%. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

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:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 12/27/21

# ORGANICS

# SEMIVOLATILES



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2166673-01  
 Client ID: PE-01\_12032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 12/03/21 11:59  
 Date Received: 12/03/21  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 12/19/21 20:37  
 Analyst: JJW  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 12/17/21 16:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>PAHs by GC/MS-SIM - Westborough Lab</b>						
Acenaphthene	ND		ug/kg	7.9	1.7	1
2-Chloronaphthalene	ND		ug/kg	7.9	1.0	1
Fluoranthene	81		ug/kg	7.9	0.56	1
Naphthalene	3.9	J	ug/kg	7.9	1.4	1
Benzo(a)anthracene	36		ug/kg	7.9	0.75	1
Benzo(a)pyrene	48		ug/kg	7.9	0.95	1
Benzo(b)fluoranthene	65		ug/kg	7.9	0.75	1
Benzo(k)fluoranthene	26		ug/kg	7.9	0.71	1
Chrysene	47		ug/kg	7.9	0.60	1
Acenaphthylene	6.9	J	ug/kg	7.9	0.99	1
Anthracene	4.2	J	ug/kg	7.9	0.64	1
Benzo(ghi)perylene	37		ug/kg	7.9	0.68	1
Fluorene	1.4	J	ug/kg	7.9	0.95	1
Phenanthrene	22		ug/kg	7.9	0.68	1
Dibenzo(a,h)anthracene	5.6	J	ug/kg	7.9	0.79	1
Indeno(1,2,3-cd)pyrene	46		ug/kg	7.9	0.95	1
Pyrene	79		ug/kg	7.9	0.56	1
1-Methylnaphthalene	1.8	J	ug/kg	7.9	1.2	1
2-Methylnaphthalene	2.5	J	ug/kg	7.9	2.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2166673-01  
 Client ID: PE-01\_12032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 12/03/21 11:59  
 Date Received: 12/03/21  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 12/08/21 00:01  
 Analyst: RS  
 Percent Solids: 83%

Extraction Method: ALPHA 23528  
 Extraction Date: 12/07/21 09:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.592	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.592	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.296	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.592	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.296	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.296	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.296	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.592	0.212	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.592	0.162	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.296	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.365		ng/g	0.296	0.154	1
Perfluorodecanoic Acid (PFDA)	0.117	J	ng/g	0.296	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.592	0.340	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.354	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.592	0.239	1
Perfluoroundecanoic Acid (PFUnA)	0.191	JF	ng/g	0.592	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.592	0.181	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.592	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.592	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.592	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.592	0.242	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.592	0.064	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	11.8	4.51	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.18	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.96	0.142	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**SAMPLE RESULTS**

Lab ID: L2166673-01  
 Client ID: PE-01\_12032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 12/03/21 11:59  
 Date Received: 12/03/21  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.96	0.202	1
PFAS, Total (6)	0.482	J	ng/g	0.296	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63	Q	66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72	Q	75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	59		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/07/21 22:54  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 12/07/21 09:28

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1580042-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/07/21 22:54  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 12/07/21 09:28

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1580042-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	112		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	36		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 12/08/21 11:55  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 12/07/21 09:28

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1580042-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	108		10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8270D-SIM  
Analytical Date: 12/19/21 20:21  
Analyst: JJW

Extraction Method: EPA 3546  
Extraction Date: 12/17/21 16:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1584799-1					
Acenaphthene	ND		ug/kg	6.6	1.4
2-Chloronaphthalene	ND		ug/kg	6.6	0.85
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	1.2	J	ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
1-Methylnaphthalene	ND		ug/kg	6.6	1.0
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	83		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2166673

**Project Number:** 5060.00

**Report Date:** 12/27/21

Parameter	LCS	Qual	LCSD	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1580042-2								
Perfluorobutanoic Acid (PFBA)	91		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	91		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	90		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	90		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	80		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	93		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	92		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	100		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	95		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	90		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	91		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	105		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	95		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	81		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	93		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	81		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	93		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	91		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	91		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	85		-		69-135	-		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2166673

**Report Date:** 12/27/21

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1580042-2								
Perfluorotridecanoic Acid (PFTrDA)	98		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	95		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	90		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	96		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	89		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	<b>10</b>		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2166673

Project Number: 5060.00

Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1580042-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	97				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	96				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	49				10-145

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1580042-2								
Perfluorooctanesulfonamide (FOSA)	111		-		67-137	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	105				10-117

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2166673

**Project Number:** 5060.00

**Report Date:** 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1584799-2 WG1584799-3								
Acenaphthene	88		92		40-140	4		50
2-Chloronaphthalene	91		93		40-140	2		50
Fluoranthene	102		104		40-140	2		50
Naphthalene	83		90		40-140	8		50
Benzo(a)anthracene	101		100		40-140	1		50
Benzo(a)pyrene	108		109		40-140	1		50
Benzo(b)fluoranthene	104		109		40-140	5		50
Benzo(k)fluoranthene	107		103		40-140	4		50
Chrysene	93		95		40-140	2		50
Acenaphthylene	97		98		40-140	1		50
Anthracene	93		97		40-140	4		50
Benzo(ghi)perylene	103		110		40-140	7		50
Fluorene	95		96		40-140	1		50
Phenanthrene	90		93		40-140	3		50
Dibenzo(a,h)anthracene	107		112		40-140	5		50
Indeno(1,2,3-cd)pyrene	103		105		40-140	2		50
Pyrene	100		102		35-142	2		50
1-Methylnaphthalene	91		96		40-140	5		50
2-Methylnaphthalene	88		92		40-140	4		50

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1584799-2 WG1584799-3								

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	75		81		23-120
2-Fluorobiphenyl	84		86		30-120
4-Terphenyl-d14	88		88		18-120

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2166673

**Project Number:** 5060.00

**Report Date:** 12/27/21

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580042-3 QC Sample: L2166673-01 Client ID: PE-01_12032021												
Perfluorobutanoic Acid (PFBA)	ND	5.56	5.02	90		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	5.56	5.12	92		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	4.94	4.48	91		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.21	4.92	95		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	5.56	5.13	92		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.23	4.25	81		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	5.56	5.05	91		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.08	4.90	96		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	5.56	5.00	90		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	5.3	5.03	95		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.3	4.62	87		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	5.56	5.44	98		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.365	5.16	5.56	101		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	0.117J	5.56	5.30	93		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.34	5.44	102		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	5.35	5.11	96		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	5.56	7.30	131		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.191JF	5.56	5.16	89		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	5.36	5.25	98		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	5.56	4.98	90		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	5.56	6.12	110		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	5.56	5.34	96		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2166673

**Report Date:** 12/27/21

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): 01 QC Batch ID: WG1580042-3 QC Sample: L2166673-01 Client ID: PE-01_12032021												
Perfluorotridecanoic Acid (PFTTrDA)	ND	5.56	6.26	113		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	5.56	5.75	103		-	-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	54.2	66.6F	123		-	-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	5.25	4.13	79		-	-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	5.56	5.04	91		-	-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	5.56	2.58J	46		-	-		10-123	-		30

Surrogate (Extracted Internal Standard)	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97				19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	89				14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95				20-154
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	68				10-203
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	24	Q			34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	17	Q			31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84				61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74	Q			75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65	Q			66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67	Q			71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95				78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64				24-159
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61				10-145

**Matrix Spike Analysis****Batch Quality Control****Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2166673**Project Number:** 5060.00**Report Date:** 12/27/21

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580042-3 QC Sample: L2166673-01 Client ID: PE-01\_12032021

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C4]Butanoic Acid (MPFBA)	68				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69				58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91				79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>73</b>	Q			75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	73				72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93				74-139



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580042-4 QC Sample: L2166673-01 Client ID: PE-01_12032021						
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)	0.365	0.418	ng/g	14		30
Perfluorodecanoic Acid (PFDA)	0.117J	0.161JF	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)	0.191JF	0.163JF	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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580042-4 QC Sample: L2166673-01 Client ID: PE-01_12032021						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/g	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/g	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/g	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		68		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		71		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		91		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		83		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63	Q	68		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64	Q	69	Q	71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		93		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73	Q	82		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		87		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		78		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		88		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72	Q	77		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		125		19-175

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1580042-4 QC Sample: L2166673-01 Client ID: PE-01_12032021						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27	Q	29	Q	31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		78		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48		54		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q	22	Q	34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		72		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		70		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	81		76		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	59		58		10-145

# **INORGANICS & MISCELLANEOUS**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

**SAMPLE RESULTS**

**Lab ID:** L2166673-01  
**Client ID:** PE-01\_12032021  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 12/03/21 11:59  
**Date Received:** 12/03/21  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>Total Organic Carbon - Mansfield Lab</b>										
Total Organic Carbon (Rep1)	2.04		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP
Total Organic Carbon (Rep2)	2.22		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP
Total Organic Carbon (Average)	2.13		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	12/07/21 07:52	121,2540G	RI



Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2166673

Project Number: 5060.00

Report Date: 12/27/21

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1579956-2										
Solids, Total	100		%	0.100	NA	1	-	12/07/21 07:52	121,2540G	RI
Total Organic Carbon - Mansfield Lab for sample(s): 01 Batch: WG1582133-1										
Total Organic Carbon (Rep1)	ND		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP
Total Organic Carbon (Rep2)	ND		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP
Total Organic Carbon (Average)	ND		%	0.050	0.050	1	-	12/11/21 11:46	13,-	SP

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Organic Carbon - Mansfield Lab Associated sample(s): 01 Batch: WG1582133-2								
Total Organic Carbon (Rep1)	114		-		75-125	-		25
Total Organic Carbon (Rep2)	109		-		75-125	-		25
Total Organic Carbon (Average)	111		-		75-125	-		25



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2166673

**Report Date:** 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1579956-1 QC Sample: L2166282-02 Client ID: DUP Sample						
Solids, Total	87.4	88.0	%	1		20
Total Organic Carbon - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1582133-3 QC Sample: L2166673-01 Client ID: PE-01_12032021						
Total Organic Carbon (Rep1)	2.04	2.91	%	35	Q	25
Total Organic Carbon (Rep2)	2.22	2.35	%	6		25
Total Organic Carbon (Average)	2.13	2.63	%	21		25



**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2166673**Project Number:** 5060.00**Report Date:** 12/27/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Present/Intact

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2166673-01A	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Present/Intact		ME-TS-2540(7)
L2166673-01B	Glass 250ml/8oz unpreserved	A	NA		3.4	Y	Present/Intact		PAHTCL-SIM(14)
L2166673-01C	Plastic 8oz unpreserved	A	NA		3.4	Y	Present/Intact		A2-ME-537ISOTOPE-28+(14)
L2166673-01X	Glass 60ml unpreserved split	A	NA		3.4	Y	Present/Intact		A2-TOC-LK-2REPS(14)

**PFAS PARAMETER SUMMARY**

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

## 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:** MAINE BACKGROUND SOILS STUDY  
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### 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:** MAINE BACKGROUND SOILS STUDY  
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#### **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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2166673  
**Report Date:** 12/27/21

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 13 Determination of Total Organic Carbon in Sediment. U.S. EPA, Region II. July 27, 1988.
- 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.



## Certification Information

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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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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

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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, **LCHAT 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**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







### Bill Shipping Charge to

Shipper        Next Day  
 Recipient        Same Day

090913

10 Iron Road  
 Hermon, Maine 04401

Phone 207•848•7546 ■ Toll-Free 800•427•7547 ■ Fax 207•561•2467

390 US Route One, #3  
 Falmouth, Maine 04105

FROM: Shipper <u>Alpha</u>	TO: Recipient <u>Alpha</u>
Street <u>72 Center St.</u>	Street <u>8 Walkup Drive</u>
Origin <u>Brewer ME</u> Zip Code <u>04412</u>	Destination <u>Westboro MA</u> Zip Code <u>01581</u>
Phone #	Phone #

No. Pieces	Weight Each	Description of Items	Total Weight (Subject to Correction)	Oversize Charge	Shipping Charges
<u>2</u>		<u>Cooler</u>			

<u>2</u> TOTAL PIECES	WEIGHT GRAND TOTAL	TOTAL CHARGES
-----------------------	--------------------	---------------

Shipper authorizes Uniship to deliver this shipment without obtaining a delivery signature.  
 Shipper's Signature [Signature]

Please use complete ship to address.  
 Uniship can not deliver to P.O. Boxes.

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property, under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property overall or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.  
 Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER	PICK-UP TIME <u>1700</u>	RECIPIENT <u>[Signature]</u>	DELIVERY TIME <u>2328</u>
COURIER SIGNATURE <u>[Signature]</u>	DATE <u>12-3-21</u>	COURIER SIGNATURE	DATE

RECIPIENT COPY



SCI SPEC Committed to Quality Since 1963 PRECLEANED CONTAINERS

DATE	SIGNATURE
12/3/21	<i>[Handwritten Signature]</i>

scispec.com

dy Sea SCI SPEC PRECLEANED CONTAINERS C20000 Committed to Quality Since 1963

The image shows two orange labels for SCI SPEC containers. The left label is a 'Custody Seal' with a date of 12/3/21 and a handwritten signature. The right label is a 'dy Sea' seal. Both labels feature the SCI SPEC logo and the text 'Committed to Quality Since 1963' and 'PRECLEANED CONTAINERS'.

**Alpha Analytical Laboratories, Inc.**  
**L2202048**



## ANALYTICAL REPORT

Lab Number:	L2202048
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	01/28/22

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-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2202048-01	WL-02_11102021_DUP	SOIL	VARIOUS, MAINE	11/10/21 09:50	01/13/22

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

### 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.

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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

### 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

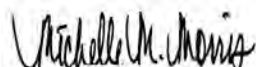
L2202048-01: As noted on the chain of custody, the sample was frozen by the client in order to arrest the holding time.

L2202048-01: The MeOH fraction of the extraction is reported for perfluorooctanesulfonamide (fosa) due to better extraction efficiency of the perfluoro[13c8]octanesulfonamide (m8fosa) Extracted Internal Standard.

L2202048-01, -01 MeOH, WG1595577-1 MeOH, and WG1595577-2 MeOH: 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:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 01/28/22

# ORGANICS



# SEMIVOLATILES

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**SAMPLE RESULTS**

Lab ID: L2202048-01  
 Client ID: WL-02\_11102021\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 01/13/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 01/19/22 18:25  
 Analyst: SG  
 Percent Solids: 76%

Extraction Method: ALPHA 23528  
 Extraction Date: 01/19/22 09:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.238	J	ng/g	0.598	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.498	J	ng/g	0.598	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.299	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.378	J	ng/g	0.598	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	0.898		ng/g	0.299	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	0.151	J	ng/g	0.299	0.072	1
Perfluorooctanoic Acid (PFOA)	6.55		ng/g	0.299	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.598	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.410	J	ng/g	0.598	0.163	1
Perfluorononanoic Acid (PFNA)	11.0		ng/g	0.299	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	92.9		ng/g	0.299	0.156	1
Perfluorodecanoic Acid (PFDA)	19.7		ng/g	0.299	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.764	F	ng/g	0.598	0.344	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.358	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.598	0.241	1
Perfluoroundecanoic Acid (PFUnA)	10.3		ng/g	0.598	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	13.7		ng/g	0.598	0.183	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.32		ng/g	0.598	0.101	1
Perfluorododecanoic Acid (PFDoA)	4.08		ng/g	0.598	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	0.856		ng/g	0.598	0.245	1
Perfluorotetradecanoic Acid (PFTA)	0.968		ng/g	0.598	0.065	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	12.0	4.56	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.20	0.049	1
Perfluorohexadecanoic Acid (PFHxDA)	0.367	J	ng/g	2.99	0.144	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.99	0.205	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**SAMPLE RESULTS**

Lab ID: L2202048-01  
 Client ID: WL-02\_11102021\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 01/13/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
PFAS, Total (6)	131	J	ng/g	0.299	0.050	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	58	Q	61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	57	Q	58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	116		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		61-155
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	74		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	47		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**SAMPLE RESULTS**

Lab ID: L2202048-01  
 Client ID: WL-02\_11102021\_DUP  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 09:50  
 Date Received: 01/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 01/21/22 10:42  
 Analyst: RS  
 Percent Solids: 76%

Extraction Method: ALPHA 23528  
 Extraction Date: 01/19/22 09:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctanesulfonamide (FOSA)	2.14		ng/g	0.598	0.117	1
<b>Surrogate (Extracted Internal Standard)</b>				<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonamide (M8FOSA)				153	Q	10-117

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 01/19/22 17:52  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 01/19/22 09:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1595577-1					
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)	ND		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)	ND		ng/g	0.500	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		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)	ND		ng/g	0.500	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.204
Perfluorotetradecanoic Acid (PFTA)	0.102	J	ng/g	0.500	0.054
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/g	10.0	3.81
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/g	1.00	0.041

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 01/19/22 17:52  
Analyst: SG

Extraction Method: ALPHA 23528  
Extraction Date: 01/19/22 09:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1595577-1					
Perfluorohexadecanoic Acid (PFHxDA)	0.198	J	ng/g	2.50	0.120
Perfluorooctadecanoic Acid (PFODA)	ND		ng/g	2.50	0.171
PFAS, Total (6)	ND		ng/g	0.250	0.042

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	153		14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	115		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112		20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		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)	98		19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	110		10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57		10-145

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 01/21/22 10:27  
Analyst: RS

Extraction Method: ALPHA 23528  
Extraction Date: 01/19/22 09:57

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1595577-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.098

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	136	Q	10-117

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2202048

**Project Number:** 5060.00

**Report Date:** 01/28/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1595577-2								
Perfluorobutanoic Acid (PFBA)	88		-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	90		-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	86		-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	88		-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	84		-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	87		-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	90		-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	95		-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		-		70-132	-		30
Perfluorononanoic Acid (PFNA)	90		-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	91		-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	96		-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	89		-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	92		-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	89		-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	86		-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	84		-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	83		-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	88		-		69-135	-		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2202048

**Report Date:** 01/28/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1595577-2								
Perfluorotridecanoic Acid (PFTrDA)	85		-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	91		-		69-133	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	102		-		41-165	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	98		-		68-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	111		-		18-191	-		30
Perfluorooctadecanoic Acid (PFODA)	27		-		10-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2202048

Project Number: 5060.00

Report Date: 01/28/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1595577-2								

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102				61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95				58-150
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119				74-139
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111				14-167
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110				66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107				71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118				78-139
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	107				20-154
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				72-140
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115				79-136
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101				75-130
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114				19-175
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83				31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				61-155
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19				10-117
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86				34-137
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103				54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				24-159
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	103				10-203
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	70				10-145

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2202048

**Report Date:** 01/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1595577-2								
Perfluorooctanesulfonamide (FOSA)	122		-		67-137	-		30

<b>Surrogate (Extracted Internal Standard)</b>	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	157	Q			10-117

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2202048

**Project Number:** 5060.00

**Report Date:** 01/28/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1595577-3 WG1595577-4 QC Sample: L2202070-02 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	6.16	5.32	86		5.12	85		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	ND	6.16	5.55	90		5.43	91		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	ND	5.47	4.74	87		4.61	87		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.76	5.55	96		5.17	92		62-145	7		30
Perfluorohexanoic Acid (PFHxA)	ND	6.16	5.48	89		5.30	88		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.79	5.03	87		4.99	89		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	ND	6.16	5.26	85		5.21	87		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	5.63	5.16	92		4.94	90		67-130	4		30
Perfluorooctanoic Acid (PFOA)	ND	6.16	5.62	91		5.34	89		69-133	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	5.86	6.16	105		5.32	93		64-140	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.86	4.80	82		4.67	82		70-132	3		30
Perfluorononanoic Acid (PFNA)	ND	6.16	5.51	90		5.36	89		72-129	3		30
Perfluorooctanesulfonic Acid (PFOS)	ND	5.71	5.39	94		5.03	90		68-136	7		30
Perfluorodecanoic Acid (PFDA)	ND	6.16	5.41	88		5.25	88		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.91	5.97	101		5.64	98		65-137	6		30
Perfluorononanesulfonic Acid (PFNS)	ND	5.92	5.52	93		5.14	89		69-125	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.16	5.72	93		5.12	85		63-144	11		30
Perfluoroundecanoic Acid (PFUnA)	ND	6.16	5.58	91		5.26	88		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	ND	5.93	5.23	88		4.87	84		59-134	7		30
Perfluorooctanesulfonamide (FOSA)	ND	6.16	5.04	82		5.23	87		67-137	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	6.16	5.32	86		4.80	80		61-139	10		30
Perfluorododecanoic Acid (PFDoA)	ND	6.16	5.58	91		5.20	87		69-135	7		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2202048

**Project Number:** 5060.00

**Report Date:** 01/28/22

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): 01 QC Batch ID: WG1595577-3 WG1595577-4 QC Sample: L2202070-02 Client ID: MS Sample												
Perfluorotridecanoic Acid (PFTrDA)	ND	6.16	5.28	86		5.00	83		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	0.138J	6.16	6.00	95		5.29	86		69-133	13		30

Surrogate (Extracted Internal Standard)	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		97		19-175
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		102		14-167
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		104		20-154
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		75		34-137
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		76		31-134
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		97		61-155
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		99		75-130
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		103		66-128
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		103		71-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		104		78-139
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		90		54-150
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	55		59		24-159
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		99		61-135
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		89		58-150
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		43		10-117
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		104		79-136
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		97		75-130
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		96		72-140
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		108		74-139

# **INORGANICS & MISCELLANEOUS**

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

### SAMPLE RESULTS

**Lab ID:** L2202048-01  
**Client ID:** WL-02\_11102021\_DUP  
**Sample Location:** VARIOUS, MAINE

**Date Collected:** 11/10/21 09:50  
**Date Received:** 01/13/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	75.6		%	0.100	0.100	1	-	01/17/22 12:35	121,2540G	AE



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2202048

**Report Date:** 01/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1594667-1 QC Sample: L2160482-01 Client ID: DUP Sample						
Solids, Total	69.6	66.8	%	4		10



**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2202048**Project Number:** 5060.00**Report Date:** 01/28/22**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**

L2202048-01A    Plastic 8oz unpreserved

<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
A	NA		4.0	Y	Absent		A2-ME-537ISOTOPE-28+(14),A2-TS(7)

**PFAS PARAMETER SUMMARY**

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

## 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

### 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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

**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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2202048  
**Report Date:** 01/28/22

## 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.



## Certification Information

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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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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

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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, **LCHAT 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**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





**University of Maine Soil Testing Service  
Laboratory Report**

Troy Smith  
 Maine DEP  
 17 SHS, BRWM  
 Augusta ME 04333



1/10/2022

received: 11/24/2021

Sample type - soil  
 Analysis - Particle Size/Texture

Job # 4021  
 (amended)

Sample ID	Lab #	soil pH	buffer pH	% LOI	mg/kg												me/100gm ECEC
					Ca	K	Mg	P	Al	B	Cu	Fe	Mn	Na	S	Zn	
AN-01	1	5.5	5.99	2.8	99	58	17	1.4	316	< 0.05	0.10	9.3	2.3	6.0	14	0.8	1.4
AN-02	2	5.3	5.95	2.0	101	30	7.9	1.8	287	< 0.05	0.63	32	4.9	8.9	15	2.1	1.5
AN-02_Dup	3	5.4	5.95	2.4	102	30	8.3	1.8	296	< 0.05	0.69	33	5.1	9.8	15	2.2	1.5
AN-03	4	3.8	3.87	82.3	825	106	298	5.6	15	0.13	0.07	2.2	3.2	257	19	0.9	15.2
AN-04	5	4.9	5.43	9.2	35	36	16	1.0	891	< 0.05	0.16	34	0.8	28	39	1.4	3.0
AR-01	6	7.6	0.00	3.3	4392	33	68	2.1	16	0.62	0.16	4.6	26	11	2.4	1.3	8.5
AR-02	7	6.5	6.31	5.2	2238	156	73	0.9	40	0.24	0.12	3.7	5.0	15	4.7	0.3	7.8
AR-03	8	6.1	6.09	5.1	1733	37	215	1.8	72	0.15	0.42	61	13	22	12	0.3	6.7
AR-04	9	7.5	0.00	1.8	4106	50	76	7.0	14	0.39	0.21	6.6	20	5.8	1.9	1.2	6.9
CU-01	10	5.9	6.47	0.2	38	11	5.8	0.6	64	< 0.05	0.08	6.9	1.5	3.0	1.5	0.2	0.3
CU-02	11	6.4	6.22	6.6	1761	56	77	0.6	158	0.18	0.06	9.9	4.6	47	12	0.9	9.8
CU-03	12	6.4	6.13	3.9	728	103	101	0.3	141	0.07	0.07	23	5.9	191	9.0	0.6	5.6
CU-04	13	6.3	6.37	0.9	256	35	29	0.2	68	< 0.05	0.18	8.6	2.5	23	2.0	0.3	1.7
FR-01	14	6.4	6.28	2.4	612	36	38	0.4	67	0.12	0.19	7.7	5.9	77	2.5	7.3	3.8
FR-02	15	5.3	5.97	3.1	45	24	8.6	1.0	270	< 0.05	0.19	27	14	25	37	1.0	1.3
FR-03	16	5.3	5.84	6.8	102	89	21	0.7	468	0.07	0.18	11	6.3	12	33	1.1	2.1
FR-04	17	5.7	6.09	3.4	71	45	8.3	0.6	439	0.06	0.89	12	2.8	15	16	0.4	0.8
FR-04_Dup	18	5.7	6.02	3.4	81	48	11	0.6	474	0.05	0.63	13	2.7	15	16	0.4	1.0
HA-01	19	5.8	6.13	2.1	685	148	155	1.1	85	0.08	0.18	12	6.3	14	3.1	0.4	5.1
HA-02	20	5.8	6.34	1.0	76	49	10	0.8	104	< 0.05	0.15	5.2	5.2	7.6	2.9	0.2	0.6
HA-03	21	5.4	5.80	6.5	475	85	47	3.6	207	< 0.05	0.14	22	11	29	11	3.6	4.2
HA-04	22	5.3	5.48	14.1	646	66	44	1.2	593	0.10	0.20	49	14	11	15	6.9	5.9
KE-01	23	6.7	6.33	5.3	2906	253	138	21	19	0.66	0.17	2.5	5.1	18	6.1	5.4	8.3
KE-02	24	6.5	6.23	2.7	941	139	59	0.8	97	0.11	0.19	4.1	6.8	26	8.7	0.2	5.7
KE-03	25	6.4	6.26	3.0	741	73	39	1.1	139	0.11	0.21	6.5	2.4	9.9	7.3	9.5	4.3
KE-04	26	5.5	5.91	4.3	453	76	50	1.3	250	0.09	0.26	64	11	17	12	0.5	3.8
KN-01	27	6.2	6.22	4.2	1147	120	55	0.7	90	0.15	0.28	18	14	17	19	0.4	6.6
KN-02	28	6.7	6.34	3.3	857	90	43	5.7	20	0.15	0.12	3.5	5.0	113	3.5	1.2	5.4
KN-03	29	6.1	6.23	3.2	693	64	58	0.5	100	0.09	0.18	7.4	6.9	16	6.5	0.6	4.2
KN-04	30	6.3	6.37	0.9	497	43	96	0.7	62	0.05	0.36	10	6.0	17	3.6	0.2	3.5
LI-01	31	6.2	6.29	1.4	246	58	12	0.5	120	< 0.05	0.27	12	4.2	51	4.1	0.3	1.7
LI-02	32	5.9	6.00	3.4	611	86	122	1.1	176	0.10	0.23	82	4.9	28	5.9	0.2	4.6
LI-03	33	5.5	6.02	5.9	217	100	43	1.5	383	< 0.05	0.13	12	4.8	13	14	0.3	2.2
LI-04	34	6.2	6.24	2.0	374	32	23	0.6	57	< 0.05	0.19	8.1	3.2	56	2.1	1.3	2.4
OX-01	35	5.8	6.09	4.5	71	63	13	1.2	328	0.10	0.24	91	2.5	6.3	38	0.2	0.7
OX-02	36	5.7	6.07	3.1	629	100	32	2.7	162	0.10	0.12	25	1.6	8.4	6.1	0.4	3.9
OX-02_DUP	37	5.9	6.16	2.8	620	98	31	2.6	163	0.09	0.14	25	1.6	7.5	5.8	0.3	3.6

Sample ID	Lab #	soil pH	buffer pH	% LOI	mg/kg												me/100gm	
					Ca	K	Mg	P	Al	B	Cu	Fe	Mn	Na	S	Zn	ECEC	
OX-03	38	5.4	6.05	4.7	125	46	15	1.4	374	0.10	0.92	98	8.9	16	27	1.8	1.4	
OX-04	39	5.3	5.70	3.4	367	86	34	1.1	261	0.08	0.14	13	2.7	6.6	6.9	1.2	3.8	
PE-01	40	5.8	5.87	4.2	347	42	51	1.5	254	< 0.05	0.25	12	2.7	9.3	8.6	1.4	2.9	
PE-02	41	6.2	6.15	3.6	585	102	49	2.4	92	< 0.05	0.22	9.6	6.8	17	3.4	3.4	3.7	
PE-02_DUP	42	6.5	6.46	3.6	729	71	57	1.5	85	0.06	0.26	6.9	5.8	11	3.4	3.7	4.3	
PE-03	43	5.6	5.87	5.8	589	66	42	0.8	192	0.06	0.22	11	11	12	8.1	0.9	4.3	
PE-04	44	5.9	6.07	5.6	81	147	11	0.9	420	< 0.05	0.11	17	7.9	12	20	0.5	0.9	
PI-01	45	5.8	6.07	11.2	2904	45	96	18	80	0.32	0.53	26	14	11	17	19	15.6	
PI-02	46	6.0	6.12	6.3	1118	43	79	0.6	186	0.09	0.16	6.6	3.5	9.4	6.3	0.6	6.4	
PI-03	47	5.9	6.12	0.6	238	34	17	0.4	38	< 0.05	0.10	2.2	1.6	2.9	1.0	0.0	1.4	
PI-04	48	5.6	6.14	6.0	240	35	18	1.5	477	< 0.05	0.42	16	4.0	14	16	0.1	1.6	
SA-01	49	5.8	6.06	2.3	289	33	21	4.2	159	< 0.05	0.09	14	1.8	7.2	5.4	1.0	1.9	
SA-02	50	6.1	6.30	3.5	562	166	64	1.5	208	0.10	0.53	59	4.4	25	38	0.5	3.9	
SA-03	51	5.7	6.08	2.3	1008	172	201	1.1	44	0.16	0.45	15	4.9	12	4.1	28	7.3	
SA-04	52	5.5	5.87	2.7	560	84	32	1.8	144	0.06	0.21	11	3.8	6.7	5.8	0.6	4.2	
SO-01	53	6.2	6.16	1.9	83	63	8	0.8	338	0.06	0.18	8.3	1.4	5.2	27	0.2	0.7	
SO-02	54	6.2	6.16	3.0	265	102	25	1.2	231	< 0.05	0.14	6.5	2.7	8.3	4.5	0.1	1.8	
SO-03	55	5.0	5.78	2.1	452	20	33	0.4	66	< 0.05	0.32	16	13	62	4.4	0.2	4.4	
SO-04	56	5.9	6.10	2.9	387	99	55	0.5	120	< 0.05	0.53	18	13	17	5.7	0.6	2.7	
WL-01	57	6.0	6.34	1.3	87	30	11	0.6	124	< 0.05	0.07	3.3	1.4	3.9	2.9	0.2	0.6	
WL-02	58	6.8	6.39	5.9	2571	52	70	34	22	0.29	0.76	7.6	6.2	12	9.6	5.3	9.1	
WL-03	59	6.4	6.22	2.8	136	58	96	5.0	45	0.07	0.13	7.8	5.4	86	1.7	0.6	2.0	
WL-04	60	6.0	6.24	2.2	379	40	44	0.7	92	< 0.05	0.21	7.9	8.7	9.7	4.2	0.7	2.4	
WS-01	61	5.3	5.92	3.7	95	56	18	0.8	265	< 0.05	0.15	25	9.2	8.4	7.1	1.1	1.7	
WS-02	62	5.1	5.51	10.2	213	165	38	14	305	< 0.05	0.21	69	7.9	14	20	2.3	4.0	
WS-03	63	5.9	5.91	7.4	1780	61	110	1.5	54	0.18	0.18	5.9	7.8	11	3.8	10	10.5	
WS-04	64	5.6	5.94	5.0	528	89	75	1.5	160	0.05	0.25	10	4.7	16	5.7	6.8	4.1	
YO-01	65	6.5	6.54	0.2	129	15	12	0.4	15	< 0.05	0.27	4.2	0.8	1.5	0.2	0.2	0.8	
YO-02	66	5.7	6.48	0.4	69	10	18	1.1	18	< 0.05	0.08	12	0.2	1.7	0.8	0.0	0.5	
YO-03	67	5.5	6.11	3.2	22	14	5.9	0.9	341	< 0.05	0.05	8.0	1.5	4.9	33	0.2	0.5	
YO-04	68	5.3	5.91	4.7	59	33	12	2.2	272	< 0.05	0.14	13	8.4	7.1	29	0.9	1.5	

Soil pH was measured in distilled water and Mehlich lime buffer. Organic matter was determined by loss on ignition(LOI) at 375 C. samples were extracted in modified Morgan solution (pH 4.8 ammonium acetate). P was determined colorimetrically by Flow Injection Analysis. All other elements were determined by ICP-OES. Results are presented as parts per million weight basis (mg/kg). Readily exchangeable acidity is calculated from soil pH and lime buffer pH. Effective cation exchange capacity (ECEC) is calculated by summation of milliequivalent levels of Ca, K, Mg, Na, and acidity. ECEC is adjusted at higher pH levels, where necessary, to compensate for unreacted lime content.

Bruce Hoskins  
Assistant Scientist



1/5/2022

Troy Smith  
Maine DEP  
17 SHS, BRWM  
Augusta ME 04333

received: 11/24/2021

Sample type - soil

Analysis - Particle Size/Texture

Job # 4021

<u>Sample ID</u>	<u>% Sand</u>	<u>% Silt</u>	<u>% Clay</u>	<u>Texture Class</u>
AN-01	79	16	5	Loamy sand
AN-02	52	36	12	Sandy loam/Loam
AN-02_Dup	51	36	13	Sandy loam/Loam
AN-03	<i>Insufficient mineral material (82 % organic material)</i>			
AN-04	39	46	15	Loam
AR-01	49	36	15	Loam
AR-02	49	36	15	Loam
AR-03	28	53	19	Silt loam
AR-04	75	15	10	Sandy loam
CU-01	89	8	3	Sand
CU-02	65	25	10	Sandy loam
CU-03	62	20	18	Sandy loam
CU-04	82	10	8	Loamy sand
FR-01	70	22	8	Sandy loam
FR-02	75	17	8	Sandy loam
FR-03	49	41	10	Loam
FR-04	44	48	8	Loam
FR-04_Dup	41	50	9	Loam
HA-01	38	40	22	Loam
HA-02	75	20	5	Sandy loam
HA-03	63	31	6	Sandy loam
HA-04	51	39	10	Sandy loam/Loam
KE-01	19	68	13	Silt loam
KE-02	15	64	21	Silt loam
KE-03	65	26	9	Sandy loam
KE-04	13	68	19	Silt loam
KN-01	61	28	11	Sandy loam
KN-02	81	13	6	Loamy sand
KN-03	51	36	13	Sandy loam/Loam
KN-04	60	29	11	Sandy loam
LI-01	68	24	8	Sandy loam
LI-02	17	61	22	Silt loam
LI-03	24	55	21	Silt loam
LI-04	80	14	6	Loamy sand

<u>Sample ID</u>	<u>% Sand</u>	<u>% Silt</u>	<u>% Clay</u>	<u>Texture Class</u>
<b>OX-01</b>	54	40	6	Sandy loam
<b>OX-02</b>	69	23	8	Sandy loam
<b>OX-02_DUP</b>	69	23	8	Sandy loam
<b>OX-03</b>	35	56	9	Silt loam
<b>OX-04</b>	71	22	7	Sandy loam
<b>PE-01</b>	76	16	8	Sandy loam
<b>PE-02</b>	61	28	11	Sandy loam
<b>PE-02_DUP</b>	57	32	11	Sandy loam
<b>PE-03</b>	46	41	13	Loam
<b>PE-04</b>	57	31	12	Sandy loam
<b>PI-01</b>	45	47	8	Loam
<b>PI-02</b>	41	47	12	Loam
<b>PI-03</b>	85	11	4	Loamy sand
<b>PI-04</b>	31	53	16	Silt loam
<b>SA-01</b>	79	16	5	Loamy sand
<b>SA-02</b>	71	20	9	Sandy loam
<b>SA-03</b>	14	55	31	Silt loam
<b>SA-04</b>	59	26	15	Sandy loam
<b>SO-01</b>	49	43	8	Loam
<b>SO-02</b>	43	40	17	Loam
<b>SO-03</b>	83	13	4	Loamy sand
<b>SO-04</b>	54	30	16	Sandy loam
<b>WL-01</b>	88	9	3	Loamy sand/Sand
<b>WL-02</b>	73	21	6	Sandy loam
<b>WL-03</b>	81	14	5	Loamy sand
<b>WL-04</b>	71	24	5	Sandy loam
<b>WS-01</b>	70	20	10	Sandy loam
<b>WS-02</b>	50	37	13	Loam
<b>WS-03</b>	66	23	11	Sandy loam
<b>WS-04</b>	64	27	9	Sandy loam
<b>YO-01</b>	90	8	2	Sand
<b>YO-02</b>	96	2	2	Sand
<b>YO-03</b>	84	9	7	Loamy sand
<b>YO-04</b>	65	27	8	Sandy loam

Particle size analysis was run on < 2 mm fraction of each sample, after overnight dispersion in Calgon solution. Clay was determined by the hydrometer method. Sand was determined gravimetrically by wet sieving. Silt is calculated as the remainder of the sample. Particle sizes and texture classes are from the USDA.

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Assistant Scientist

**APPENDIX E**  
**SPLP AND TOP ASSAY RESULTS**

# APPENDIX E

## SPLP AND TOP ASSAY RESULTS

### SAMPLE COLLECTION AND STORAGE

Soil sample containers were stored at -20 degrees Celsius at Maine DEP facilities for later PFAS analysis by Synthetic Precipitation Leaching Procedure (SPLP, USEPA Method 1312) and by Total Oxidizable Precursor Assay (TOP Assay). The sample containers for SPLP and TOP Assay analyses were filled in the field at the same time and from the same composite sample as the containers submitted for the primary analyses for this study. Just as separate containers were collected for analyses of PFAS, PAHs, and soil parameters, the SPLP and TOP Assay samples were subject to variability potentially introduced by aliquoting from the field composite sample into the separate laboratory containers. Additionally, the SPLP and TOP Assay samples were submitted to the laboratories after being stored at -20°C from November 11, 2021, to February 15, 2022.

### SAMPLE SELECTION

Samples were selected for SPLP and TOP Assay analyses based on initial review of PFAS analytical results. The thirty-three samples analyzed by SPLP were selected to provide relatively uniform coverage over urban and non-urban samples, range of PFAS impacts, and spatial distribution. The nine samples analyzed by TOP Assay were weighted towards samples with greater PFAS impacts, but relatively uniform coverage over urban and non-urban samples and spatial distribution was attempted.

The sample selection process is described in Exhibit 1 below.

#### Exhibit 1 Sample Selection Process

- *Step 1: Removed WL-02, which is considered an outlier, from possible additional analysis list. Duplicate samples were also excluded.*
- *Step 2: Calculate sum of PFOA, PFOS, and PFBA (the three most detected PFAS) for each sample. PFAS concentrations tended to correlate, so the sum of these three PFAS was used as an indicator of overall PFAS impacts. One-half the method detection limit was used for non-detect data. Seven samples were non-detect for PFOA, PFOS, and PFBA (AR-03, CU-01, HA-02, KN-04, WL-01, WS-01, and YO-01).*
- *Step 3: Separate data into urban and non-urban samples.*
- *Step 4: Analyses were selected according to the sample's rank based on sum of PFOA, PFOS, and PFBA.*

*For SPLP analysis, every two samples were selected, starting with the highest PFAS sample (i.e., ranks 1, 3, 5, etc.).*

*For TOP assay, every four samples were selected, starting with the highest PFAS sample and ending after four urban and four non-urban samples were selected (i.e., ranks 1, 5, 9, and 13).*

*Finally, SA-02 was also selected for SPLP and TOP Assay analyses as the sample with the second highest overall PFAS impacts.*

- *Step 5: Checked and modified for spatial coverage. Because three samples in Kennebec County were originally selected for SPLP and TOP Assay analyses and no samples in Aroostook County were selected for SPLP or TOP Assay analyses, the 'KE-03' (Urban rank 9) analyses were moved to 'AR-01' (Urban rank 8).*

A tabular summary of the sample selection process results is provided as Table E.1.

## **ANALYTICAL RESULTS**

The analytical laboratory data reports for the SPLP and the TOP Assay results are provided in this appendix as Attachment E.1. Tabulated analytical results are provided in Table E.2 – SPLP PFAS in Soil and Table E.3 – Pre- and Post-TOP Assay PFAS in Soil. A summary of the data quality assessment findings is provided as Table E.4. Additionally, a comparison of the original PFAS results with the Pre-TOP Assay PFAS results is provided as Table E.5.

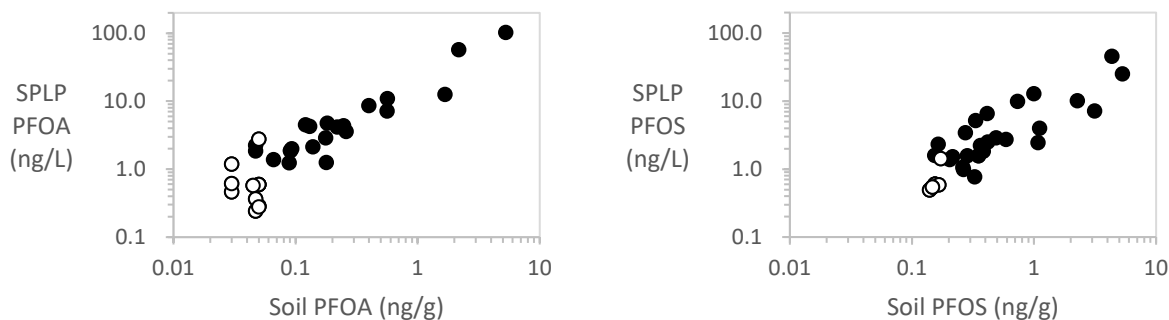
### **SPLP Results**

The SPLP analysis included mixing the soil sample with an acidic solution at a liquid-to-solid mass ratio of about 20:1. After mixing, the solution/leachate was separated and analyzed for PFAS via USEPA Method 537 (modified) with isotope dilution. The SPLP results are reported as an aqueous concentration in the units of nanogram per liter (ng/L). The SPLP PFAS in Soil results are summarized in Table E.3.

Perfluorinated carboxylic acids (PFCAs) and perfluorinated sulfonic acids (PFSAs) were commonly detected in the SPLP leachate. Perfluorooctanoic acid (PFOA) was detected in 31 of 33 SPLP samples, and perfluorooctanesulfonic acid (PFOS) was detected in 30 of 33 SPLP samples. The detection rates for PFOA, PFOS, and some other PFAS were greater for SPLP than for the regular soil analyses, which is at least partially attributed to the relatively low detection limits achieved for aqueous matrices.

PFAS concentrations detected in soil and in SPLP leachate appeared to be correlated. Statistical tests of correlation are not presented, but correlation plots of SPLP and soil concentrations for PFOA and PFOS are presented in Exhibit 2 below. Log-log axes were used to better show the wide-ranging data, and a linear relationship between log-SPLP and log-soil concentrations for PFOA and PFOS is apparent. Similar to PFOA and PFOS soil concentrations, PFOA and PFOS SPLP concentrations ranged over about two orders of magnitude or more.



**Exhibit 2 SPLP and Soil Correlation Plots for PFOA and PFOS****Note:**

1. Samples with non-detect values for soil analyses are plotted as open circles at the method detection limit. Samples with non-detect SPLP values also had non-detect values for soil analyses, and these samples are not shown on the plot (2 samples for PFOA and 3 for PFOS).

**TOP Assay Results**

The TOP Assay analyses included quantification of PFAS in the soil sample before and after oxidation. Oxidation was performed on the sample extracts using hot persulfate in an alkaline solution, which is designed to convert (oxidize) some precursor PFAS into relatively stable PFCAs and PFSAs.<sup>1,2</sup> For this discussion, PFCAs and PFSAs are considered together as perfluorinated alkyl acids (PFAAs). Known precursor PFAS were generally not detected in the original soil samples, so the detected increase in PFAAs measured in the post-TOP sample are indicative of precursor PFAS not quantified with the original or pre-TOP PFAS analyses.

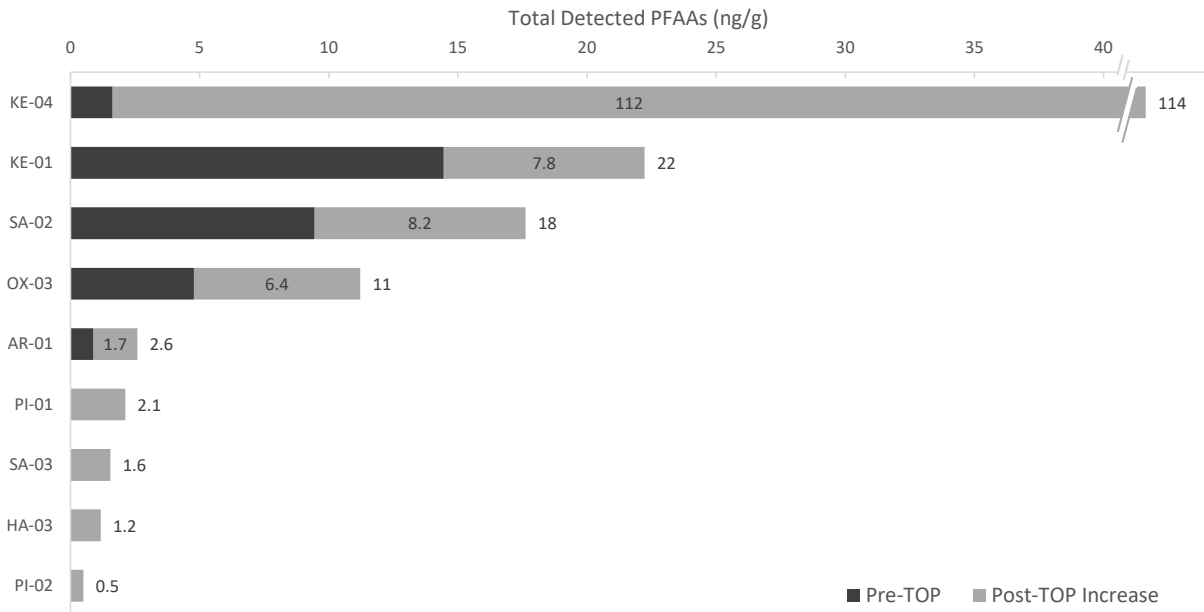
In many cases, specific PFAAs were not detected in the pre-TOP analysis but were detected in the post-TOP analysis. This pattern generally indicates some presence of precursor PFAS, although the amount or percentage of increase is unknown because the original amount of PFAA was not quantified. The TOP Assay results are presented in this appendix assuming the pre-TOP PFAA concentration was 0 if the analyte was not detected. This results in a greater calculated increase than other methods, such as assuming the detection limit as the Pre-TOP concentration.

The pre- and post-TOP results for total detected PFAAs are presented in Exhibit 3 below. In the pre-TOP analyses, PFAAs were detected in 5 of 9 samples. In the post-TOP analyses, PFAAs were detected in all 9 samples. Except of sample KE-04, the post-TOP PFAA concentrations constituted between a 50- and 200-percent increase for samples with PFAAs detected in the pre-TOP analysis. Sample KE-04 had a dramatic increase of about 8-times the pre-TOP total detected PFAA concentration (i.e., about 7,000-percent increase).

<sup>1</sup> "Analysis of the unknown pool of PFAS: Total Oxidizable Precursors (TOP), PFOS Precursor (PreFOS) and Telomer Degradation", Patrick van Hees, Eurofins Environment Testing Sweden AB and Man-TechnologyEnvironment Research Centre, Örebro University.

<sup>2</sup> "Oxidative Conversion as a Means of Detecting Precursors to Perfluoroalkyl Acids in Urban Runoff", Erika F. Houtz and David L. Sedlak, Environ. Sci. Technol. 2012, 46, 17, 9342-9349.

**Exhibit 3 Pre- and Post-TOP Results for Total Detected PFAAs**



**Note:**

1. The Pre-TOP to Post-TOP increase values were calculated assuming non-detect Pre-TOP concentration of 0. This results in a greater calculated increase than other methods, such as assuming the detection limit as the Pre-TOP concentration.

In addition to providing a baseline for comparison to the post-TOP analytical results, the pre-TOP analytical results provide a duplicative measure of PFAS in the original soil sample. Because the original PFAS soil analyses were completed by Alpha Analytical Laboratories, Inc. (Alpha) and the pre-TOP analyses were completed by Eurofins Lancaster Laboratories (Eurofins), comparison of these results provided some measure of potential cross-laboratory variability. In addition to potential differences related to considerations for TOP Assay, laboratory methods may differ on aspects such as extraction procedures and extract clean-up because a USEPA method for PFAS soil analysis is not published at this time. As noted earlier in this appendix text, the TOP Assay samples were also subject to variability potentially introduced by aliquoting from the field composite sample into the separate laboratory containers, and the TOP Assay samples were submitted to Eurofins after being stored at -20°C for about three months.

A comparison of the original PFAS in soil concentrations with the pre-TOP PFAS concentrations is provided in Table E.5. The detection limits associated with the pre-TOP analyses were typically higher than for the original analyses, and many results were non-detect, so relative percent differences (RPDs) were not calculable for many cases. The most detected PFAS were PFOA and PFOS. PFOA and PFOS were detected in 5 of 9 pre-TOP samples, with RPDs ranging from 28 to 84 percent. Although not apparent in the PFOA results, there appears to be a potential systematic bias with the pre-TOP PFOS results being consistently lower than the original analytical PFOS results.

# APPENDIX E TABLES

**Table E.1**  
**Summary of SPLP and TOP Assay Sample Selection Process**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Sample Location	Urban or Non-Urban	Sum of PFOS, PFOA, and PFBA (ng/g)	Rank	Additional Analyses
KE-01	Urban	8.28	1	TOP and SPLP
SA-02	Urban	6.58	2	TOP and SPLP
AN-03	Urban	5.11	3	SPLP
CU-02	Urban	1.92	4	
KE-04	Urban	1.73	5	TOP and SPLP
AN-04	Urban	1.71	6	
FR-02	Urban	1.41	7	SPLP
AR-01	Urban	1.35	8	TOP and SPLP
KE-03	Urban	1.30	9	
PE-03	Urban	1.17	10	
CU-03	Urban	1.10	11	SPLP
SO-01	Urban	1.09	12	
PI-02	Urban	0.87	13	TOP and SPLP
WS-03	Urban	0.78	14	
YO-04	Urban	0.73	15	SPLP
KN-01	Urban	0.64	16	
OX-01	Urban	0.54	17	SPLP
SA-01	Urban	0.51	18	
AN-02	Urban	0.45	19	SPLP
SO-02	Urban	0.44	20	
PE-01	Urban	0.40	21	SPLP
PE-02	Urban	0.32	22	
OX-02	Urban	0.29	23	SPLP
YO-02	Urban	0.26	24	
LI-02	Urban	0.24	25	SPLP
AR-02	Urban	0.22	26	
KN-02	Urban	0.22	27	SPLP
AR-04	Urban	0.15	28	
HA-01	Urban	0.14	29	SPLP
CU-04	Urban	0.12	30	
YO-01	Urban	0.10	31	SPLP

Sample Location	Urban or Non-Urban	Sum of PFOS, PFOA, and PFBA (ng/g)	Rank	Additional Analyses
OX-03	Non-Urban	6.12	1	TOP and SPLP
WS-02	Non-Urban	0.96	2	
FR-03	Non-Urban	0.72	3	SPLP
PE-04	Non-Urban	0.70	4	
SA-03	Non-Urban	0.65	5	TOP and SPLP
FR-04	Non-Urban	0.64	6.5	
WS-04	Non-Urban	0.64	6.5	SPLP
FR-01	Non-Urban	0.64	8.5	
PI-01	Non-Urban	0.64	8.5	TOP and SPLP
LI-01	Non-Urban	0.63	10	
PI-04	Non-Urban	0.59	11	SPLP
KE-02	Non-Urban	0.58	12	
HA-03	Non-Urban	0.51	13	TOP and SPLP
AN-01	Non-Urban	0.48	14	
LI-04	Non-Urban	0.44	15	SPLP
SA-04	Non-Urban	0.41	16	
HA-04	Non-Urban	0.41	17	SPLP
YO-03	Non-Urban	0.41	18	
LI-03	Non-Urban	0.33	19	SPLP
OX-04	Non-Urban	0.33	20	
KN-03	Non-Urban	0.32	21	SPLP
WL-04	Non-Urban	0.25	22	
SO-03	Non-Urban	0.22	23	SPLP
AR-03	Non-Urban	0.15	24	
WL-03	Non-Urban	0.14	25	SPLP
KN-04	Non-Urban	0.12	26	
SO-04	Non-Urban	0.12	27	SPLP
PI-03	Non-Urban	0.12	28	
WS-01	Non-Urban	0.12	29	SPLP
WL-01	Non-Urban	0.11	30	
HA-02	Non-Urban	0.10	31	SPLP
CU-01	Non-Urban	0.10	32	

Notes:

1. Refer to Appendix E text for details and assumptions underlying the sample selection process.

**Table E.2**  
**Summary of Analytical Data - SPLP PFAS in Soil**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Sample Location	Lab Sample ID	Sample Date	Concentrations in ng/L												
			Perfluoroalkyl Carboxylic Acids										Perfluoroalkyl Sulfonic Acids		
			Perfluorobutanoic Acid (PFBA) [3]	Perfluoropentanoic Acid (PFPeA) [4]	Perfluorohexanoic Acid (PFHxA) [5]	Perfluoroheptanoic Acid (PFHpA) [6]	Perfluorooctanoic Acid (PFOA) [7]	Perfluorononanoic Acid (PFNA) [8]	Perfluorodecanoic Acid (PFDA) [9]	Perfluoroundecanoic Acid (PFUnA) [10]	Perfluorotetradecanoic Acid (PFTeA) [13]	Perfluorohexadecanoic Acid (PFHxDA) [15]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluorohexanesulfonic Acid (PFHxS) [6S]	Perfluorooctanesulfonic Acid (PFOS) [8S]
AN-02	L2208579-01	11/18/2021	0.390 J	<0.364	0.548 J	0.912 J	2.78	1.71 J	0.320 JF	<0.239	<0.228	<1.14	0.357 J	0.482 J	6.53
AN-03	L2208579-02	11/18/2021	3.96	2.92	3.23	6.05	12.6	3.08	0.395 J	<0.249	<0.238	<1.19	0.402 J	0.479 J	7.17
AR-01	L2208579-03	11/15/2021	2.09	1.01 J	0.930 J	1.28 J	2.14 F	0.636 JF	<0.293	<0.251	<0.239	<1.20	0.258 J	<0.363	3.98
CU-03	L2208579-04	11/8/2021	0.669 J	0.978 J	0.962 J	0.906 J	3.60	1.09 JF	<0.301	<0.257	<0.245	<1.23	0.970 J	0.459 J	9.86
FR-02	L2208579-05	11/16/2021	<0.389	1.27 J	1.26 J	2.27	8.63	8.37	1.69 J	<0.248	<0.237	<1.18	<0.227	<0.359	12.8
FR-03	L2208579-06	11/16/2021	3.96	2.80	1.57 J	3.40	4.74	2.20	0.359 JF	<0.254	<0.242	<1.21	0.625 J	<0.367	1.82 J
HA-01	L2208579-07	11/18/2021	0.854 J	<0.412	0.491 J	0.570 J	0.595 JF	0.700 JF	<0.316	<0.271	<0.258	<1.29	<0.248	<0.391	0.595 J
HA-02	L2208579-08	11/18/2021	0.492 J	<0.380	<0.315	<0.216	<0.227	0.403 JF	<0.292	<0.250	<0.238	<1.19	<0.228	<0.361	<0.484
HA-03	L2208579-09	11/18/2021	2.79	1.09 J	0.827 J	1.42 J	2.01 F	1.77 J	0.440 J	<0.247	<0.235	<1.18	0.425 J	<0.357	1.56 J
HA-04	L2208579-10	11/18/2021	2.76	1.04 J	0.736 J	1.41 J	1.19 J	1.44 JF	<0.301	<0.257	<0.245	<1.23	0.368 J	<0.372	1.06 J
KE-01	L2208579-11	11/17/2021	16.9	17.7	32.0	38.5	103	21.6	5.92	<0.243	<0.232	<1.16	1.02 J	<0.351	10.1
KE-04	L2208579-12	11/17/2021	0.989 J	1.02 J	1.71 J	2.97	7.19	3.57	<0.289	<0.247	<0.236	<1.18	<0.226	<0.358	2.44
KN-02	L2208579-13	11/9/2021	1.08 J	<0.384	<0.318	0.350 J	0.241 JF	0.338 J	<0.295	<0.252	<0.241	<1.20	<0.231	<0.365	1.58 J
KN-03	L2208579-14	11/10/2021	<0.401	<0.389	<0.322	0.260 JF	0.287 JF	0.511 J	<0.299	<0.256	<0.244	<1.22	<0.234	<0.370	0.979 J
LI-02	L2208579-15	11/17/2021	0.821 J	<0.392	0.563 J	0.706 J	1.24 J	0.436 J	<0.301	<0.258	<0.246	<1.23	<0.236	<0.373	0.587 J
LI-03	L2208579-16	11/9/2021	3.55	1.66 J	1.84 J	2.40	4.49	1.52 JF	<0.289	<0.247	<0.236	<1.18	0.544 J	<0.358	1.42 J
LI-04	L2208579-17	11/9/2021	1.82 J	1.16 J	1.12 J	1.21 J	1.86 J	1.16 J	0.760 J	<0.246	<0.234	<1.17	0.231 J	<0.356	5.17
OX-01	L2208579-18	11/15/2021	0.410 J	0.501 J	0.459 JF	0.914 J	4.36	2.48	0.341 J	<0.247	<0.235	<1.18	0.341 J	<0.357	3.43
OX-02	L2208579-19	11/15/2021	1.28 J	0.445 J	0.384 J	0.639 J	0.464 J	1.96 F	<0.289	<0.247	<0.236	<1.18	<0.226	<0.358	1.51 J
OX-03	L2208579-20	11/16/2021	3.72	6.27	8.30	2.65	11.0	2.98	0.573 J	<0.247	<0.235	<1.18	0.277 J	<0.357	25.2
PE-01	L2208579-21	12/3/2021	2.79	0.944 BJ	<0.315	0.372 J	0.614 J	1.86 J	0.395 J	<0.249	0.729 BJ	1.42 BJF	<0.228	<0.361	2.21
PI-01	L2208579-22	11/10/2021	0.802 J	0.775 BJ	<0.321	0.516 J	1.26 J	0.708 J	<0.297	<0.254	0.602 BJ	1.69 BJF	<0.233	<0.368	0.771 J
PI-02	L2208579-23	11/19/2021	1.27 J	1.25 BJ	0.794 J	1.25 J	2.88	2.03	<0.297	<0.254	0.661 BJ	1.68 BJF	0.728 J	<0.368	2.73
PI-04	L2208579-24	11/11/2021	2.17	1.24 BJ	0.937 J	1.75 J	4.16	1.79 J	<0.296	<0.253	0.607 BJ	1.52 BJF	0.614 J	<0.366	1.38 J
SA-02	L2208579-25	11/18/2021	1.74 J	2.18 B	2.68	6.06	57.7	57.6	23.2	2.30	0.720 BJ	1.46 BJF	0.429 J	0.907 J	45.6
SA-03	L2208579-26	11/9/2021	2.26	0.893 BJ	1.05 J	1.46 J	4.29	2.18	<0.299	<0.256	0.692 BJ	1.66 BJF	0.555 J	<0.370	2.49
SO-03	L2208579-27	11/11/2021	0.534 J	0.849 BJ	0.514 JF	0.894 J	2.26	2.19	0.314 J	<0.265	0.751 BJ	1.70 BJF	<0.243	<0.384	2.32 F
SO-04	L2208579-28	11/11/2021	0.852 J	0.441 BJ	<0.318	0.403 J	0.573 J	0.922 J	<0.294	<0.252	0.774 BJ	1.80 BJF	<0.230	<0.364	0.492 J
WL-03	L2208579-29	11/10/2021	2.25	0.746 BJ	0.341 JF	0.386 J	0.367 J	0.508 J	<0.282	<0.241	0.742 BJ	1.66 BJ	<0.221	<0.349	0.542 J
WS-01	L2208579-30	11/18/2021	0.792 J	0.758 BJ	<0.311	0.288 J	0.280 J	0.640 J	0.307 J	0.280 J	0.648 BJ	1.74 BJF	<0.225	<0.356	<0.477
WS-04	L2208579-31	11/18/2021	3.97	1.64 BJ	1.04 JF	1.26 J	1.88 J	1.79 J	0.339 JF	<0.253	0.716 BJ	1.71 BJF	0.237 J	<0.366	1.56 J
YO-01	L2208579-32	11/8/2021	<0.404	<0.393	<0.325	<0.223	<0.234	0.369 J	<0.301	<0.258	0.758 BJ	1.70 BJ	<0.236	<0.373	<0.500
YO-04	L2208579-33	11/8/2021	3.98	1.56 BJ	0.710 JF	1.29 J	1.39 J	4.01	0.761 JF	<0.255	0.820 BJ	1.77 BJ	0.514 J	<0.369	2.88

Notes:

1. Samples were collected by Sanborn Head or Maine Department of Environmental Protection (Maine DEP) and stored at -20°C from 11/11/2021 to 2/15/2022. Samples were analyzed by Alpha Analytical (Alpha) of Mansfield and Westborough, Massachusetts, for SPLP PFAS analysis using USEPA Method 1312 for non-volatile extraction, modified to use materials acceptable for PFAS analysis, and USEPA Method 537 (modified) with isotope dilution.
2. PFAS results are presented in nanograms per liter (ng/L), which are equivalent to parts per trillion (ppt). Only detected analytes are depicted on this table. Refer to Study Report Table 2 and the analytical laboratory reports for the complete list of parameters analyzed.
3. "<" indicates the analyte was not detected at or above the indicated laboratory Method Detection Limit (MDL).  
 "B" indicates the compound was present in the associated laboratory method blank. Refer to Table F.3 for additional information.  
 "F" indicates the ion transition ratio is outside the acceptance criteria and the concentration should be considered an estimated maximum concentration.  
 "J" indicates the result is considered estimated because of Data Quality Assessment actions (see Table F.3) or the concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL).  
 [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
 [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons in PFASs are fluorinated.

**Table E.3**  
**Summary of Analytical Data - Pre- and Post-TOP Assay PFAS in Soil**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Parameter	Method	Units	AR-01	HA-03	KE-01	KE-04	OX-03	PI-01	PI-02	SA-02	SA-03
			11/15/2021	11/18/2021	11/17/2021	11/17/2021	11/16/2021	11/10/2021	11/19/2021	11/18/2021	11/9/2021
<b>Perfluoroalkyl Carboxylic Acids</b>											
Perfluorobutanoic Acid (PFBA) [3]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.88	<1	<0.96	<1.1	<1.2	<1.2	<0.89	<1.3	<1
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.97	<0.99	1.4	<1.1	<1.2	<1.2	<0.91	<1.2	<1
	Pre-TOP to Post-TOP Increase	ng/g	0	0	1.4 *	0	0	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	-	-	-	-	-	-	-
Perfluoropentanoic Acid (PFPeA) [4]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	0.87	<0.28	<0.31	<0.31	<0.22	<0.32	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	0.25	0.99	2.1	0.49	<0.31	<0.23	<0.29	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0.25 *	0.12	2.1 *	0.49 *	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	14%	-	-	-	-	-	-
Perfluorohexanoic Acid (PFHxA) [5]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	1.5	<0.28	<0.31	<0.31	<0.22	<0.32	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	0.36	0.31	2.4	2.8	0.85	0.43	0.27	0.66	0.38
	Pre-TOP to Post-TOP Increase	ng/g	0.36 *	0.31 *	0.9	2.8 *	0.85 *	0.43 *	0.27 *	0.66 *	0.38 *
	Increase % (Pre- vs. Post-TOP)	%	-	-	60%	-	-	-	-	-	-
Perfluoroheptanoic Acid (PFHpA) [6]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	1.6	<0.28	<0.31	<0.31	<0.22	<0.32	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	2.2	5.9	0.33	<0.31	<0.23	0.34	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0.6	5.9 *	0.33 *	0	0	0.34 *	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	38%	-	-	-	-	-	-
Perfluorooctanoic Acid (PFOA) [7]	Pre-TOP 537 Mod (Eurofins)	ng/g	0.23	<0.25	4.7	0.59	0.78	<0.31	<0.22	1.8	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	0.29	<0.25	6.1	4.3	0.85	0.40	0.23	2.6	0.32
	Pre-TOP to Post-TOP Increase	ng/g	0.06	0	1.4	3.71	0.07	0.4 *	0.23 *	0.8	0.32 *
	Increase % (Pre- vs. Post-TOP)	%	26%	-	30%	629%	9%	-	-	44%	-
Perfluorononanoic Acid (PFNA) [8]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	1.6	0.60	<0.31	<0.31	<0.22	1.6	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	0.64	0.32	2.3	92	3.7	0.80	<0.23	2.5	0.26
	Pre-TOP to Post-TOP Increase	ng/g	0.64 *	0.32 *	0.7	91.4	3.7 *	0.8 *	0	0.9	0.26 *
	Increase % (Pre- vs. Post-TOP)	%	-	-	44%	15233%	-	-	-	56%	-
Perfluorodecanoic Acid (PFDA) [9]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	2.0	<0.28	<0.31	<0.31	<0.22	2.2	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	3.0	0.87	<0.31	<0.31	<0.23	4.6	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	1	0.87 *	0	0	0	2.4	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	50%	-	-	-	-	109%	-
Perfluoroundecanoic Acid (PFUnA) [10]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	0.64	<0.28	<0.31	<0.31	<0.22	1.5	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	1.0	3.3	<0.31	<0.31	<0.23	2.7	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0.36	3.3 *	0	0	0	1.2	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	56%	-	-	-	-	80%	-
Perfluorododecanoic Acid (PFDoA) [11]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	0.60	<0.28	<0.31	<0.31	<0.22	0.55	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	0.74	<0.28	<0.31	<0.31	<0.23	0.92	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0.14	0	0	0	0	0.37	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	23%	-	-	-	-	67%	-
<b>Perfluoroalkyl Sulfonic Acids</b>											
Perfluorohexanesulfonic Acid (PFHxS) [6S]	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	<0.24	<0.28	<0.31	<0.31	<0.22	<0.32	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	<0.26	0.44	<0.31	<0.31	<0.23	<0.29	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0	0.44 *	0	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	-	-	-	-	-	-	-
Perfluorooctanesulfonic Acid (PFOS) [8S]	Pre-TOP 537 Mod (Eurofins)	ng/g	0.66	<0.25	0.94	0.44	4.0	<0.31	<0.22	1.8	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	1.3	0.29	2.1	1.9	5.0	0.49	<0.23	3.3	0.59
	Pre-TOP to Post-TOP Increase	ng/g	0.64	0.29 *	1.16	1.46	1	0.49 *	0	1.5	0.59 *
	Increase % (Pre- vs. Post-TOP)	%	97%	-	123%	332%	25%	-	-	83%	-
<b>TOP Assay Summary Statistics</b>											
Total Detected Perfluoroalkyl Carboxylic Acids (Total PFCAs)	Pre-TOP 537 Mod (Eurofins)	ng/g	0.23	0	13.51	1.19	0.78	0	0	7.65	0
	Post-TOP 537 Mod (Eurofins)	ng/g	1.29	0.88	20.13	111.27	6.22	1.63	0.5	14.32	0.96
	Pre-TOP to Post-TOP Increase	ng/g	1.06 *	0.88 *	6.62 *	110.08 *	5.44 *	1.63 *	0.5 *	6.67 *	0.96 *
	Increase % (Pre- vs. Post-TOP)	%	461% *	-	49% *	9250% *	697% *	-	-	87% *	-
Total Detected Perfluoroalkyl Sulfonic Acids (Total PFSAs)	Pre-TOP 537 Mod (Eurofins)	ng/g	0.66	0	0.94	0.44	4.0	0	0	1.8	0
	Post-TOP 537 Mod (Eurofins)	ng/g	1.3	0.29	2.1	2.34	5.0	0.49	0	3.3	0.59
	Pre-TOP to Post-TOP Increase	ng/g	0.64	0.29 *	1.16	1.9 *	1.0	0.49 *	0	1.5	0.59 *
	Increase % (Pre- vs. Post-TOP)	%	97%	-	123%	432% *	25%	-	-	83%	-
Total Detected Perfluoroalkyl Acids (Total PFAAs)	Pre-TOP 537 Mod (Eurofins)	ng/g	0.89	0	14.45	1.63	4.8	0	0	9.45	0
	Post-TOP 537 Mod (Eurofins)	ng/g	2.59	1.17	22.23	113.61	11.2	2.12	0.5	17.62	1.55
	Pre-TOP to Post-TOP Increase	ng/g	1.7 *	1.17 *	7.78 *	111.98 *	6.4 *	2.12 *	0.5 *	8.17 *	1.55 *
	Increase % (Pre- vs. Post-TOP)	%	191% *	-	54% *	6870% *	135% *	-	-	86% *	-

**Table E.3**  
**Summary of Analytical Data - Pre- and Post-TOP Assay PFAS in Soil**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Parameter	Method	Units	AR-01	HA-03	KE-01	KE-04	OX-03	PI-01	PI-02	SA-02	SA-03
			11/15/2021	11/18/2021	11/17/2021	11/17/2021	11/16/2021	11/10/2021	11/19/2021	11/18/2021	11/9/2021
<b>Fluorotelomers</b>											
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.66	<0.76	<0.72	<0.84	<0.92	<0.92	<0.67	<0.95	<0.76
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.73	<0.74	<0.79	2.9	<0.92	<0.93	<0.68	<0.86	<0.76
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0	2.9 *	0	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	-	-	-	-	-	-	-
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.66	<0.76	<0.72	<0.84	<0.92	<0.92	<0.67	<0.95	<0.76
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.73	<0.74	<0.79	2.2 J	<0.92	<0.93	<0.68	<0.86	<0.76
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0	2.2 *	0	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	-	-	-	-	-	-	-
<b>Perfluoroalkane Sulfonyl Substances</b>											
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22	<0.25	<0.24	<0.28	0.65 J	<0.31	<0.22	<0.32	<0.25
	Post-TOP 537 Mod (Eurofins)	ng/g	<0.24	<0.25	<0.26	<0.28	<0.31	<0.31	<0.23	<0.29	<0.25
	Pre-TOP to Post-TOP Increase	ng/g	0	0	0	0	0	0	0	0	0
	Increase % (Pre- vs. Post-TOP)	%	-	-	-	-	-	-	-	-	-

Notes:

- Samples were collected by Sanborn Head or Maine Department of Environmental Protection (Maine DEP). Samples were analyzed by Eurofins Lancaster Laboratories (Eurofins) of Lancaster, Pennsylvania, for PFAS analysis prior to a Total Oxidisable Precursor (TOP) Assay treatment and post TOP assay treatment. Samples submitted to Eurofins were stored at -20°C from 11/11/2021 to 2/15/2022.
- PFAS results are presented in nanograms per gram (ng/g), which are equivalent to parts per billion (ppb) by mass. Only detected analytes are depicted on this table. Refer to Study Report Table 2 and the analytical laboratory reports for the complete list of parameters analyzed.
- Additional information on data quality assessment actions is provided in Table F.3.  
 "<" indicates the analyte was not detected at or above the indicated laboratory Method Detection Limit (MDL).  
 "\*" indicates the Pre-TOP to Post-TOP increase was calculated assuming non-detect Pre-TOP concentration of 0. This results in a greater calculated increase than other methods, such as assuming the detection limit as the Pre-TOP concentration.  
 "B" indicates the compound was present in the associated laboratory method blank.  
 "J" indicates the result is considered estimated because of Data Quality Assessment actions or the concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL).  
 [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.  
 [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFSA). All of the carbons in PFSA are fluorinated.
- "Pre-TOP to Post-TOP Increase" indicates the magnitude of increase after the oxidation treatment. For the purposes of calculating the increase, in cases where the Pre-TOP results were non-detect, it was assumed the Pre-TOP concentration was 0 and the result is qualified with a "\*".  
 "Increase %" indicates the relative change as calculated by the following formula.  

$$\frac{(\text{Post-TOP} - \text{Pre-TOP})}{(\text{Pre-TOP})} * 100$$
  
 "-" indicates the RPD is not calculated because one or both of the results are non-detect.

**Table E.4**  
**Data Quality Assessment Actions**  
**Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Lab Job #	Matrix	Analyses	Total Solids (%) Actionable Item	Method Blank Detections	Surrogate Actionable Items	MS/MSD Actionable Items	Lab Dup Actionable Items	LCS/LCSD Actionable Items	Data Quality Assessment Actions
<b>Soil Samples</b>									
Alpha L2208579	SO	SPLP PFAS	None	<p><b>WG1610215-1</b>                      PFPeA: 0.600 J ng/L                      PFTeA: 0.672 J ng/L                      PFHxDA: 1.42 JF ng/L</p> <p><b>WG1610215-5</b>                      PFTeA: 0.618 J ng/L                      PFHxDA 1.58 J ng/L</p>	<p><b>AR-01_20211115</b>                      M8FOSA: 3%R</p> <p><b>OX-03_20211116;</b>  <b>PI-04_11112021;</b>  <b>WS-01_20211118;</b>  <b>WS-04_20211118</b>                      M8FOSA: 5%R</p> <p><b>KE-04_20211117</b>                      M8FOSA: 6%R</p> <p><b>HA-01_20211118; HA-03_20211118</b>                      M8FOSA: 7%R</p> <p><b>YO-04_11082021</b>                      M8FOSA: 8%R</p> <p><b>OX-02_20211115</b>                      M8FOSA: 9%R</p> <p><b>SO-03_11112021;</b>  <b>YO-01_11082021</b>                      M8FOSA: 10%R</p>	None	None	<b>WG1610094-2</b> PFODA: LCS 7%R	<p><b>Method Blank Detections</b></p> <ul style="list-style-type: none"> <li>No impact in associated samples where blank-detected compound result was ND.</li> <li>Blank-detected compounds B qualified in associated samples where the result was within 10x blank detection level.</li> </ul> <p><b>Surrogates</b></p> <ul style="list-style-type: none"> <li>Target compounds associated with M8FOSA J qualified in associated samples; potential low bias.</li> </ul> <p><b>LCS/LCSD</b></p> <ul style="list-style-type: none"> <li>PFODA J qualified in associated samples; ND, potential low bias.</li> </ul>
Eurofins 410-73303	SO	PFAS TOP Assay	None	<b>MB 410-230740/2-B</b> PFHxA: 0.300 J ng/g	None	None	None	<b>LCS 410-230740/3-B</b> HFPODA: 139%R	<p><b>Method Blank Detections</b></p> <ul style="list-style-type: none"> <li>PFHxA was detected in all associated samples.</li> <li>PFHxA B qualified in associated samples where result was within 10x blank detection level.</li> </ul> <p><b>LCS/LCSD</b></p> <ul style="list-style-type: none"> <li>HFPO-DA ND in associated samples; no impact.</li> </ul>

**Abbreviations/Acronyms:**

Alpha = Alpha Analytical  
 Eurofins = Eurofins Lancaster Laboratories Environmental  
 SO = soil  
 PFAS = per- and polyfluoroalkyl substances  
 SPLP = synthetic precipitation leaching procedure  
 TOP Assay = total oxidisable precursor assay  
 MS = matrix spike sample  
 MSD = matrix spike duplicate sample  
 LCS = laboratory control sample  
 LCSD = laboratory control sample duplicate

**Notes:**

1. Data qualifications are reflected in Table E.2 and Table E.3. Refer to the analytical laboratory reports for details on laboratory batch QC.



**Table E.5  
Comparison of Original PFAS in Soil with Pre-TOP Assay PFAS in Soil  
Study Report - Background Levels of PFAS and PAHs in Maine Shallow Soils**

Parameter	Method	Units	AR-01	HA-03	KE-01	KE-04	OX-03	PI-01	PI-02	SA-02	SA-03								
			11/15/2021	11/18/2021	11/17/2021	11/17/2021	11/16/2021	11/10/2021	11/19/2021	11/18/2021	11/9/2021								
<b>Perfluoroalkyl Carboxylic Acids</b>																			
Perfluorobutanoic Acid (PFBA) [3]	537 Mod (Alpha)	ng/g	0.099	J	0.133	J	0.717	0.088	J	0.235	J	0.131	J	0.099	J	0.052	J	0.097	J
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.88		<1		<0.96	<1.1		<1.2		<1.2		<0.89		<1.3		<1	
	RPD (Alpha vs. Eurofins)	%	-		-		-		-		-		-		-		-		-
Perfluoropentanoic Acid (PFPeA) [4]	537 Mod (Alpha)	ng/g	0.078	BJ	<0.058		1.02	0.088	J	0.376	J	0.160	J	<0.056		0.063	J	0.063	J
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		0.87	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		16%		-		-		-		-		-		-
Perfluorohexanoic Acid (PFHxA) [5]	537 Mod (Alpha)	ng/g	0.063	JF	<0.066		1.49	0.111	J	0.426	J	13.7		<0.064		0.104	J	0.072	JF
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		1.5	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		1%		-		-		-		-		-		-
Perfluoroheptanoic Acid (PFHpA) [6]	537 Mod (Alpha)	ng/g	0.090	J	<0.057		1.62	0.221	J	0.102	J	0.075	J	0.081	J	0.207	J	0.067	J
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		1.6	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		1%		-		-		-		-		-		-
Perfluorooctanoic Acid (PFOA) [7]	537 Mod (Alpha)	ng/g	0.139	JF	0.093	J	5.29	0.563		0.566		0.179	J	0.177	JF	2.18		0.131	JF
	Pre-TOP 537 Mod (Eurofins)	ng/g	0.23	J	<0.25		4.7	0.59	J	0.78	J	<0.31		<0.22		1.8		<0.25	
	RPD (Alpha vs. Eurofins)	%	49%		-		12%	5%		32%		-		-		19%		-	
Perfluorononanoic Acid (PFNA) [8]	537 Mod (Alpha)	ng/g	<0.088		0.124	J	1.93	0.545		0.227	J	0.181	BJ	0.205	J	2.02		<0.095	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		1.6	0.60	J	<0.31		<0.31		<0.22		1.6		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		19%	10%		-		-		-		23%		-	
Perfluorodecanoic Acid (PFDA) [9]	537 Mod (Alpha)	ng/g	0.114	JF	<0.084		3.24	0.191	J	0.164	J	<0.103		0.088	JF	3.22		<0.085	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		2.0	<0.28		<0.31		<0.31		<0.22		2.2		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		47%	-		-		-		-		38%		-	
Perfluoroundecanoic Acid (PFUnA) [10]	537 Mod (Alpha)	ng/g	0.057	JF	0.064	JF	0.944	0.166	J	0.195	J	<0.072		0.062	J	1.93		<0.059	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		0.64	<0.28		<0.31		<0.31		<0.22		1.5		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		38%	-		-		-		-		25%		-	
Perfluorododecanoic Acid (PFDoA) [11]	537 Mod (Alpha)	ng/g	<0.083		<0.088		0.841	<0.093		<0.098		<0.108		<0.085		0.610		<0.089	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		0.60	<0.28		<0.31		<0.31		<0.22		0.55	J	<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		33%	-		-		-		-		10%		-	
Perfluorotetradecanoic Acid (PFTeA) [13]	537 Mod (Alpha)	ng/g	<0.064		<0.068		0.277	BJ	<0.072		<0.075		<0.083		<0.066		0.131	BJ	<0.069
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		<0.24	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		-		-		-		-		-	
<b>Perfluoroalkyl Sulfonic Acids</b>																			
Perfluorohexanesulfonic Acid (PFHxS) [6S]	537 Mod (Alpha)	ng/g	<0.071		<0.076		<0.067	<0.08		<0.085		<0.093		<0.074		<0.068		<0.077	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		<0.24	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		-		-		-		-		-	
Perfluorooctanesulfonic Acid (PFOS) [8S]	537 Mod (Alpha)	ng/g	1.11		0.285	J	2.27	1.08		5.32		0.326	J	0.592		4.35		0.420	
	Pre-TOP 537 Mod (Eurofins)	ng/g	0.66		<0.25		0.94	0.44	J	4.0		<0.31		<0.22		1.8		<0.25	
	RPD (Alpha vs. Eurofins)	%	51%		-		83%	84%		28%		-		-		83%		-	
Perfluorodecanesulfonic Acid (PFDS) [10S]	537 Mod (Alpha)	ng/g	<0.18		<0.192		<0.17	<0.203		<0.214		<0.235		<0.186		0.224	J	<0.194	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		<0.24	<0.28		<0.31		<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		-		-		-		-		-	
<b>Fluorotelomers</b>																			
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	537 Mod (Alpha)	ng/g	<0.212		<0.226		<0.199	<0.238		<0.251		<0.276		<0.219		<0.201		<0.228	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.66		<0.76		<0.72	<0.84		<0.92		<0.92		<0.67		<0.95		<0.76	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		-		-		-		-		-	
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	537 Mod (Alpha)	ng/g	<0.338		<0.361		<0.319	<0.38		<0.401		<0.441		<0.35		<0.322		<0.364	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.66		<0.76		<0.72	<0.84		<0.92		<0.92		<0.67		<0.95		<0.76	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		-		-		-		-		-	
<b>Perfluoroalkane Sulfonyl Substances</b>																			
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NETFOSAA)	537 Mod (Alpha)	ng/g	<0.1		<0.106		<0.094	<0.112		0.291	J	<0.13		<0.103		0.124	J	<0.107	
	Pre-TOP 537 Mod (Eurofins)	ng/g	<0.22		<0.25		<0.24	<0.28		0.65	J	<0.31		<0.22		<0.32		<0.25	
	RPD (Alpha vs. Eurofins)	%	-		-		-	-		76%		-		-		-		-	

Notes:

- Samples were collected by Sanborn Head or Maine Department of Environmental Protection (Maine DEP). Samples were analyzed by Alpha Analytical (Alpha) of Mansfield and Westborough, Massachusetts, for PFAS analysis using USEPA Method 537 (modified) with isotope dilution. Samples were analyzed by Eurofins Lancaster Laboratories (Eurofins) of Lancaster, Pennsylvania, for PFAS analysis prior to a Total Oxidisable Precursor (TOP) Assay treatment and post TOP assay treatment. Samples submitted to Eurofins were stored at -20°C from 11/11/2021 to 2/15/2022.
- PFAS results are presented in nanograms per gram (ng/g), which are equivalent to parts per billion (ppb) by mass. Only detected analytes are depicted on this table. Refer to Study Report Table 2 and the analytical laboratory reports for the complete list of parameters analyzed.
- Additional information on data quality assessment actions is provided in Tables 8 and Table F.3 for the Alpha and Eurofins data, respectively.
  - "<" indicates the analyte was not detected at or above the indicated laboratory Method Detection Limit (MDL).
  - "B" indicates the compound was present in the associated laboratory method blank or field QC blank.
  - "F" indicates the ion transition ratio is outside the acceptance criteria and the concentration should be considered an estimated maximum concentration.
  - "J" indicates the result is considered estimated because of Data Quality Assessment actions or the concentration is below the quantitation limit (RL) but above the Method Detection Limit (MDL).
  - [3] = number of carbons in the alkyl chain for perfluorinated carboxylic acids (PFCAs). The carbon included in the carboxylic functional group is non-fluorinated and the remaining carbons (i.e., alkyl chain) are fluorinated.
  - [4S] = number of carbons in the alkyl chain for perfluorinated sulfonic acids (PFASs). All of the carbons in PFASs are fluorinated.
- "RPD" indicates the relative percent difference as calculated by the following formula.
$$\text{RPD} = \frac{|\text{Result1} - \text{Result2}|}{((\text{Result1} + \text{Result2}) / 2)} * 100$$

"-" indicates the RPD is not calculated because one or both of the results are non-detect.

**APPENDIX E  
ATTACHMENT E.1**

**SPLP AND TOP ASSAY ANALYTICAL  
LABORATORY DATA REPORTS**



## ANALYTICAL REPORT

Lab Number:	L2208579
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Harrison Roakes
Phone:	(603) 229-1900
Project Name:	MAINE BACKGROUND SOILS STUDY
Project Number:	5060.00
Report Date:	03/07/22

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-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2208579-01	AN-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 11:45	02/17/22
L2208579-02	AN-03_20211118	SOIL	VARIOUS, MAINE	11/18/21 10:35	02/17/22
L2208579-03	AR-01_20211115	SOIL	VARIOUS, MAINE	11/15/21 13:00	02/17/22
L2208579-04	CU-03_11082021	SOIL	VARIOUS, MAINE	11/08/21 14:10	02/17/22
L2208579-05	FR-02_20211116	SOIL	VARIOUS, MAINE	11/16/21 14:25	02/17/22
L2208579-06	FR-03_20211116	SOIL	VARIOUS, MAINE	11/16/21 11:50	02/17/22
L2208579-07	HA-01_20211118	SOIL	VARIOUS, MAINE	11/18/21 18:00	02/17/22
L2208579-08	HA-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 08:00	02/17/22
L2208579-09	HA-03_20211118	SOIL	VARIOUS, MAINE	11/18/21 17:00	02/17/22
L2208579-10	HA-04_20211118	SOIL	VARIOUS, MAINE	11/18/21 09:00	02/17/22
L2208579-11	KE-01_20211117	SOIL	VARIOUS, MAINE	11/17/21 11:20	02/17/22
L2208579-12	KE-04_20211117	SOIL	VARIOUS, MAINE	11/17/21 09:10	02/17/22
L2208579-13	KN-02_11092021	SOIL	VARIOUS, MAINE	11/09/21 14:10	02/17/22
L2208579-14	KN-03_11102021	SOIL	VARIOUS, MAINE	11/10/21 08:45	02/17/22
L2208579-15	LI-02_20211117	SOIL	VARIOUS, MAINE	11/17/21 15:00	02/17/22
L2208579-16	LI-03_11092021	SOIL	VARIOUS, MAINE	11/09/21 11:45	02/17/22
L2208579-17	LI-04_11092021	SOIL	VARIOUS, MAINE	11/09/21 12:30	02/17/22
L2208579-18	OX-01_20211115	SOIL	VARIOUS, MAINE	11/15/21 16:00	02/17/22
L2208579-19	OX-02_20211115	SOIL	VARIOUS, MAINE	11/15/21 15:00	02/17/22
L2208579-20	OX-03_20211116	SOIL	VARIOUS, MAINE	11/16/21 10:20	02/17/22
L2208579-21	PE-01_12032021	SOIL	VARIOUS, MAINE	12/03/21 11:59	02/17/22
L2208579-22	PI-01_11102021	SOIL	VARIOUS, MAINE	11/10/21 12:50	02/17/22
L2208579-23	PI-02_20211119	SOIL	VARIOUS, MAINE	11/19/21 10:05	02/17/22
L2208579-24	PI-04_11112021	SOIL	VARIOUS, MAINE	11/11/21 08:30	02/17/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2208579-25	SA-02_20211118	SOIL	VARIOUS, MAINE	11/18/21 08:15	02/17/22
L2208579-26	SA-03_11092021	SOIL	VARIOUS, MAINE	11/09/21 09:15	02/17/22
L2208579-27	SO-03_11112021	SOIL	VARIOUS, MAINE	11/11/21 11:30	02/17/22
L2208579-28	SO-04_11112021	SOIL	VARIOUS, MAINE	11/11/21 10:30	02/17/22
L2208579-29	WL-03_11102021	SOIL	VARIOUS, MAINE	11/10/21 10:40	02/17/22
L2208579-30	WS-01_20211118	SOIL	VARIOUS, MAINE	11/18/21 10:05	02/17/22
L2208579-31	WS-04_20211118	SOIL	VARIOUS, MAINE	11/18/21 15:00	02/17/22
L2208579-32	YO-01_11082021	SOIL	VARIOUS, MAINE	11/08/21 13:15	02/17/22
L2208579-33	YO-04_11082021	SOIL	VARIOUS, MAINE	11/08/21 12:20	02/17/22

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### 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.

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**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### 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.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L2208579-01 through -33: As noted on the chain of custody, the samples were frozen by the client in order to arrest the holding time.

L2208579-01 through -10, -12, -15, -18, -19, -20, -21, -22, -24, -25, -30, -31, -33, WG1610094-1, WG1610094-2, WG1610094-3, WG1610094-4, WG1610215-3, and WG1610215-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2208579-26, -28, and -29: The MeOH fraction of the extraction is reported for perfluorooctanesulfonamide (fosa) due to better extraction efficiency of the perfluoro[13c8]octanesulfonamide (m8fosa) Extracted Internal Standard.

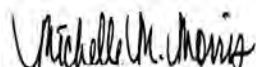
WG1610094-5: This blank represents the SPLP tumbling blank associated with L2208579-01 through -20.

WG1610215-5: This blank represents the SPLP tumbling blank associated with L2208579-21 through -33.

The WG1610094-2 LCS recovery, associated with L2208579-01 through -20, is below the acceptance criteria for perfluorooctadecanoic acid (pfoda) (7%); however, it has been identified as a "difficult" analyte. The results of the associated samples are reported.

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:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 03/07/22

# ORGANICS



# SEMIVOLATILES

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-01  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 13:59  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.390	J	ng/l	1.84	0.375	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	0.364	1
Perfluorobutanesulfonic Acid (PFBS)	0.357	J	ng/l	1.84	0.219	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.416	1
Perfluorohexanoic Acid (PFHxA)	0.548	J	ng/l	1.84	0.302	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.226	1
Perfluoroheptanoic Acid (PFHpA)	0.912	J	ng/l	1.84	0.207	1
Perfluorohexanesulfonic Acid (PFHxS)	0.482	J	ng/l	1.84	0.346	1
Perfluorooctanoic Acid (PFOA)	2.78		ng/l	1.84	0.217	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.633	1
Perfluorononanoic Acid (PFNA)	1.71	J	ng/l	1.84	0.287	1
Perfluorooctanesulfonic Acid (PFOS)	6.53		ng/l	1.84	0.464	1
Perfluorodecanoic Acid (PFDA)	0.320	JF	ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	1.11	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.84	1.03	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	0.596	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	0.239	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.901	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	0.533	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	0.739	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	0.342	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	0.301	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	0.228	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.0	20.9	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	0.309	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.68	1.14	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-01  
 Client ID: AN-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 11:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.68	1.06	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	116		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>186</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	115		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	117		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	128		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>175</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	120		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	98		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	66		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-02  
 Client ID: AN-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:35  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 14:32  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.96		ng/l	1.92	0.391	1
Perfluoropentanoic Acid (PFPeA)	2.92		ng/l	1.92	0.379	1
Perfluorobutanesulfonic Acid (PFBS)	0.402	J	ng/l	1.92	0.228	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.433	1
Perfluorohexanoic Acid (PFHxA)	3.23		ng/l	1.92	0.314	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.235	1
Perfluoroheptanoic Acid (PFHpA)	6.05		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	0.479	J	ng/l	1.92	0.360	1
Perfluorooctanoic Acid (PFOA)	12.6		ng/l	1.92	0.226	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.659	1
Perfluorononanoic Acid (PFNA)	3.08		ng/l	1.92	0.299	1
Perfluorooctanesulfonic Acid (PFOS)	7.17		ng/l	1.92	0.483	1
Perfluorodecanoic Acid (PFDA)	0.395	J	ng/l	1.92	0.291	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.621	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.249	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.939	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.556	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.770	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.356	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.313	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.9	21.7	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.92	0.322	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.83	1.19	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-02  
 Client ID: AN-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:35  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.83	1.10	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>255</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>295</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	117		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>187</b>	Q	10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	31		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	27		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-03  
 Client ID: AR-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 14:55  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.09		ng/l	1.93	0.393	1
Perfluoropentanoic Acid (PFPeA)	1.01	J	ng/l	1.93	0.382	1
Perfluorobutanesulfonic Acid (PFBS)	0.258	J	ng/l	1.93	0.230	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.93	0.436	1
Perfluorohexanoic Acid (PFHxA)	0.930	J	ng/l	1.93	0.316	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	0.236	1
Perfluoroheptanoic Acid (PFHpA)	1.28	J	ng/l	1.93	0.217	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.93	0.363	1
Perfluorooctanoic Acid (PFOA)	2.14	F	ng/l	1.93	0.228	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	0.664	1
Perfluorononanoic Acid (PFNA)	0.636	JF	ng/l	1.93	0.301	1
Perfluorooctanesulfonic Acid (PFOS)	3.98		ng/l	1.93	0.486	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	0.293	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	1.17	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.93	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	0.625	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	0.251	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	0.945	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.93	0.559	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.93	0.775	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.93	0.359	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	0.316	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	0.239	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.2	21.9	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.93	0.324	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.86	1.20	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-03  
 Client ID: AR-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 13:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.86	1.11	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>156</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>151</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	134		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>3</b>	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	61		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-04  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 15:28  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.669	J	ng/l	1.98	0.404	1
Perfluoropentanoic Acid (PFPeA)	0.978	J	ng/l	1.98	0.392	1
Perfluorobutanesulfonic Acid (PFBS)	0.970	J	ng/l	1.98	0.235	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.447	1
Perfluorohexanoic Acid (PFHxA)	0.962	J	ng/l	1.98	0.324	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.242	1
Perfluoroheptanoic Acid (PFHpA)	0.906	J	ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	0.459	J	ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	3.60		ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.681	1
Perfluorononanoic Acid (PFNA)	1.09	JF	ng/l	1.98	0.309	1
Perfluorooctanesulfonic Acid (PFOS)	9.86		ng/l	1.98	0.499	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.301	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.641	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.970	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.574	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.795	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.5	22.4	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.98	0.332	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.96	1.23	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-04  
 Client ID: CU-03\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 14:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.96	1.14	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>189</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	129		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	118		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>173</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	123		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	137		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	100		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	81		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-05  
 Client ID: FR-02\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 14:25  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 15:45  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.91	0.389	1
Perfluoropentanoic Acid (PFPeA)	1.27	J	ng/l	1.91	0.378	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.91	0.227	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.91	0.431	1
Perfluorohexanoic Acid (PFHxA)	1.26	J	ng/l	1.91	0.313	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.91	0.234	1
Perfluoroheptanoic Acid (PFHpA)	2.27		ng/l	1.91	0.215	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.91	0.359	1
Perfluorooctanoic Acid (PFOA)	8.63		ng/l	1.91	0.225	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.91	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.91	0.657	1
Perfluorononanoic Acid (PFNA)	8.37		ng/l	1.91	0.298	1
Perfluorooctanesulfonic Acid (PFOS)	12.8		ng/l	1.91	0.481	1
Perfluorodecanoic Acid (PFDA)	1.69	J	ng/l	1.91	0.290	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.91	1.16	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.91	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.91	0.618	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.91	0.248	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.91	0.935	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.91	0.554	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.91	0.767	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.91	0.355	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.91	0.312	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.91	0.237	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.7	21.7	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.91	0.321	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.82	1.18	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-05  
 Client ID: FR-02\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 14:25  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.82	1.10	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	119		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	133	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	293	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	123		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	248	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	95		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	90		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-06  
 Client ID: FR-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 11:50  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 16:01  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.96		ng/l	1.95	0.398	1
Perfluoropentanoic Acid (PFPeA)	2.80		ng/l	1.95	0.386	1
Perfluorobutanesulfonic Acid (PFBS)	0.625	J	ng/l	1.95	0.232	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.95	0.441	1
Perfluorohexanoic Acid (PFHxA)	1.57	J	ng/l	1.95	0.320	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.95	0.239	1
Perfluoroheptanoic Acid (PFHpA)	3.40		ng/l	1.95	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.95	0.367	1
Perfluorooctanoic Acid (PFOA)	4.74		ng/l	1.95	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.95	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.672	1
Perfluorononanoic Acid (PFNA)	2.20		ng/l	1.95	0.304	1
Perfluorooctanesulfonic Acid (PFOS)	1.82	J	ng/l	1.95	0.492	1
Perfluorodecanoic Acid (PFDA)	0.359	JF	ng/l	1.95	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.95	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.632	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.957	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.95	0.566	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.95	0.785	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.95	0.363	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.319	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.95	0.242	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.8	22.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.95	0.328	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.90	1.21	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-06  
 Client ID: FR-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 11:50  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.90	1.12	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>280</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>186</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	149		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	106		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	100		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-07  
 Client ID: HA-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 18:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 16:18  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.854	J	ng/l	2.08	0.425	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.08	0.412	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.08	0.248	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.08	0.470	1
Perfluorohexanoic Acid (PFHxA)	0.491	J	ng/l	2.08	0.341	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.08	0.255	1
Perfluoroheptanoic Acid (PFHpA)	0.570	J	ng/l	2.08	0.234	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.08	0.391	1
Perfluorooctanoic Acid (PFOA)	0.595	JF	ng/l	2.08	0.246	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.08	1.39	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.08	0.716	1
Perfluorononanoic Acid (PFNA)	0.700	JF	ng/l	2.08	0.325	1
Perfluorooctanesulfonic Acid (PFOS)	0.595	J	ng/l	2.08	0.525	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.08	0.316	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.08	1.26	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	2.08	1.16	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.08	0.675	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.08	0.271	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.08	1.02	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.08	0.604	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.08	0.837	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.08	0.387	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.08	0.341	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.08	0.258	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	52.0	23.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.08	0.350	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.16	1.29	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-07  
 Client ID: HA-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 18:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.16	1.20	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>170</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	131		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>167</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>7</b>	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	93		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	80		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-08  
 Client ID: HA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 16:34  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.492	J	ng/l	1.92	0.392	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.380	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.228	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.434	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.315	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.235	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.361	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.92	0.227	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.661	1
Perfluorononanoic Acid (PFNA)	0.403	JF	ng/l	1.92	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.484	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.622	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.941	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.557	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.772	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.357	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.314	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.0	21.8	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.92	0.323	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.84	1.19	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-08  
 Client ID: HA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.84	1.10	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	110		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	122		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>170</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>167</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	86		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-09  
 Client ID: HA-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 17:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 16:51  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.79		ng/l	1.90	0.387	1
Perfluoropentanoic Acid (PFPeA)	1.09	J	ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	0.425	J	ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.429	1
Perfluorohexanoic Acid (PFHxA)	0.827	J	ng/l	1.90	0.311	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.233	1
Perfluoroheptanoic Acid (PFHpA)	1.42	J	ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.357	1
Perfluorooctanoic Acid (PFOA)	2.01	F	ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.653	1
Perfluorononanoic Acid (PFNA)	1.77	J	ng/l	1.90	0.296	1
Perfluorooctanesulfonic Acid (PFOS)	1.56	J	ng/l	1.90	0.478	1
Perfluorodecanoic Acid (PFDA)	0.440	J	ng/l	1.90	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.930	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.550	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.763	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.353	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.235	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.4	21.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.319	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.80	1.18	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-09  
 Client ID: HA-03\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 17:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.80	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>175</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>162</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	126		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>7</b>	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	99		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	72		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-10  
 Client ID: HA-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:07  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.76		ng/l	1.98	0.404	1
Perfluoropentanoic Acid (PFPeA)	1.04	J	ng/l	1.98	0.392	1
Perfluorobutanesulfonic Acid (PFBS)	0.368	J	ng/l	1.98	0.236	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.447	1
Perfluorohexanoic Acid (PFHxA)	0.736	J	ng/l	1.98	0.325	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.243	1
Perfluoroheptanoic Acid (PFHpA)	1.41	J	ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	1.19	J	ng/l	1.98	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.681	1
Perfluorononanoic Acid (PFNA)	1.44	JF	ng/l	1.98	0.309	1
Perfluorooctanesulfonic Acid (PFOS)	1.06	J	ng/l	1.98	0.499	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.301	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.641	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.970	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.574	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.796	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.5	22.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.98	0.332	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.96	1.23	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-10  
 Client ID: HA-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 09:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.96	1.14	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>260</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	121		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>235</b>	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	116		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	138		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	108		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	81		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-11  
 Client ID: KE-01\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 11:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:41  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	16.9		ng/l	1.87	0.381	1
Perfluoropentanoic Acid (PFPeA)	17.7		ng/l	1.87	0.370	1
Perfluorobutanesulfonic Acid (PFBS)	1.02	J	ng/l	1.87	0.222	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.422	1
Perfluorohexanoic Acid (PFHxA)	32.0		ng/l	1.87	0.306	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.229	1
Perfluoroheptanoic Acid (PFHpA)	38.5		ng/l	1.87	0.210	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.87	0.351	1
Perfluorooctanoic Acid (PFOA)	103		ng/l	1.87	0.220	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.642	1
Perfluorononanoic Acid (PFNA)	21.6		ng/l	1.87	0.291	1
Perfluorooctanesulfonic Acid (PFOS)	10.1		ng/l	1.87	0.470	1
Perfluorodecanoic Acid (PFDA)	5.92		ng/l	1.87	0.284	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	1.13	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.87	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	0.605	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.243	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.915	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	0.541	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.751	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.347	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.305	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	0.232	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.7	21.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	0.314	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.73	1.16	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-11  
 Client ID: KE-01\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 11:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.73	1.07	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	134		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	132		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	116		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	86		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	86		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-12  
 Client ID: KE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 09:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:57  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.989	J	ng/l	1.90	0.388	1
Perfluoropentanoic Acid (PFPeA)	1.02	J	ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.430	1
Perfluorohexanoic Acid (PFHxA)	1.71	J	ng/l	1.90	0.312	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.233	1
Perfluoroheptanoic Acid (PFHpA)	2.97		ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.358	1
Perfluorooctanoic Acid (PFOA)	7.19		ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.654	1
Perfluorononanoic Acid (PFNA)	3.57		ng/l	1.90	0.297	1
Perfluorooctanesulfonic Acid (PFOS)	2.44		ng/l	1.90	0.479	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.289	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.616	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.932	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.765	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.354	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.311	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.236	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.6	21.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.320	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.80	1.18	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-12  
 Client ID: KE-04\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 09:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.80	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	146	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	135	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	133		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	125		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	113		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	87		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	99		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-13  
 Client ID: KN-02\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 14:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 18:14  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.08	J	ng/l	1.94	0.396	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.94	0.384	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.231	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.94	0.439	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.94	0.318	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	0.238	1
Perfluoroheptanoic Acid (PFHpA)	0.350	J	ng/l	1.94	0.219	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.365	1
Perfluorooctanoic Acid (PFOA)	0.241	JF	ng/l	1.94	0.229	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.668	1
Perfluorononanoic Acid (PFNA)	0.338	J	ng/l	1.94	0.303	1
Perfluorooctanesulfonic Acid (PFOS)	1.58	J	ng/l	1.94	0.489	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.295	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.94	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.629	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.951	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.563	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.781	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.361	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.318	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.94	0.241	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.5	22.0	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.94	0.326	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.88	1.20	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-13  
 Client ID: KN-02\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 14:10  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.88	1.11	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	123		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	117		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	124		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	117		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	100		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	94		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-14  
 Client ID: KN-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 08:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 18:30  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.97	0.401	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.97	0.389	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.97	0.234	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.97	0.444	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.97	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.97	0.241	1
Perfluoroheptanoic Acid (PFHpA)	0.260	JF	ng/l	1.97	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	0.287	JF	ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.676	1
Perfluorononanoic Acid (PFNA)	0.511	J	ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	0.979	J	ng/l	1.97	0.495	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.97	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.637	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.963	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.570	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.790	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.97	0.244	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.2	22.3	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.97	0.330	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.93	1.22	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-14  
 Client ID: KN-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 08:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.93	1.13	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	121		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	127		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	94		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-15  
 Client ID: LI-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 18:47  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.821	J	ng/l	1.98	0.404	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.98	0.392	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.236	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.448	1
Perfluorohexanoic Acid (PFHxA)	0.563	J	ng/l	1.98	0.325	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.243	1
Perfluoroheptanoic Acid (PFHpA)	0.706	J	ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.373	1
Perfluorooctanoic Acid (PFOA)	1.24	J	ng/l	1.98	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.682	1
Perfluorononanoic Acid (PFNA)	0.436	J	ng/l	1.98	0.309	1
Perfluorooctanesulfonic Acid (PFOS)	0.587	J	ng/l	1.98	0.500	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.301	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.642	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.971	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.575	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.797	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.369	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.246	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.6	22.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.98	0.333	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.96	1.23	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-15  
 Client ID: LI-02\_20211117  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/17/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.96	1.14	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>134</b>	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>144</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>137</b>	Q	71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	<b>133</b>	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	114		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	130		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	101		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-16  
 Client ID: LI-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 11:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 19:04  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.55		ng/l	1.90	0.388	1
Perfluoropentanoic Acid (PFPeA)	1.66	J	ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	0.544	J	ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.430	1
Perfluorohexanoic Acid (PFHxA)	1.84	J	ng/l	1.90	0.312	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.233	1
Perfluoroheptanoic Acid (PFHpA)	2.40		ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.358	1
Perfluorooctanoic Acid (PFOA)	4.49		ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.654	1
Perfluorononanoic Acid (PFNA)	1.52	JF	ng/l	1.90	0.297	1
Perfluorooctanesulfonic Acid (PFOS)	1.42	J	ng/l	1.90	0.479	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.289	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.616	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.932	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.764	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.354	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.311	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.236	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.5	21.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.320	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.80	1.18	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-16  
 Client ID: LI-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 11:45  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.80	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	136		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	104		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	69		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-17  
 Client ID: LI-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 12:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 19:20  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.82	J	ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	1.16	J	ng/l	1.89	0.374	1
Perfluorobutanesulfonic Acid (PFBS)	0.231	J	ng/l	1.89	0.225	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.427	1
Perfluorohexanoic Acid (PFHxA)	1.12	J	ng/l	1.89	0.310	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.232	1
Perfluoroheptanoic Acid (PFHpA)	1.21	J	ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	1.86	J	ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.650	1
Perfluorononanoic Acid (PFNA)	1.16	J	ng/l	1.89	0.295	1
Perfluorooctanesulfonic Acid (PFOS)	5.17		ng/l	1.89	0.476	1
Perfluorodecanoic Acid (PFDA)	0.760	J	ng/l	1.89	0.287	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.613	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.927	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.548	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.760	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.309	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.234	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.3	21.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.89	0.318	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.78	1.17	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-17  
 Client ID: LI-04\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 12:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.78	1.08	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	74		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	83		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-18  
 Client ID: OX-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 19:37  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.410	J	ng/l	1.90	0.387	1
Perfluoropentanoic Acid (PFPeA)	0.501	J	ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	0.341	J	ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.429	1
Perfluorohexanoic Acid (PFHxA)	0.459	JF	ng/l	1.90	0.311	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.232	1
Perfluoroheptanoic Acid (PFHpA)	0.914	J	ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.357	1
Perfluorooctanoic Acid (PFOA)	4.36		ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.653	1
Perfluorononanoic Acid (PFNA)	2.48		ng/l	1.90	0.296	1
Perfluorooctanesulfonic Acid (PFOS)	3.43		ng/l	1.90	0.478	1
Perfluorodecanoic Acid (PFDA)	0.341	J	ng/l	1.90	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.930	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.550	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.763	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.353	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.310	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.235	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.4	21.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.319	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.79	1.18	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-18  
 Client ID: OX-01\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 16:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.79	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	201	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	66		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-19  
 Client ID: OX-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 19:53  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.28	J	ng/l	1.90	0.388	1
Perfluoropentanoic Acid (PFPeA)	0.445	J	ng/l	1.90	0.377	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.430	1
Perfluorohexanoic Acid (PFHxA)	0.384	J	ng/l	1.90	0.312	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.233	1
Perfluoroheptanoic Acid (PFHpA)	0.639	J	ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.358	1
Perfluorooctanoic Acid (PFOA)	0.464	J	ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.654	1
Perfluorononanoic Acid (PFNA)	1.96	F	ng/l	1.90	0.297	1
Perfluorooctanesulfonic Acid (PFOS)	1.51	J	ng/l	1.90	0.479	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.90	0.289	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.616	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.932	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.552	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.765	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.354	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.311	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.236	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.6	21.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.320	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.80	1.18	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-19  
 Client ID: OX-02\_20211115  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/15/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.80	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	122		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	88		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	87		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-20  
 Client ID: OX-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 10:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 20:10  
 Analyst: RS

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 10:00

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.72		ng/l	1.90	0.387	1
Perfluoropentanoic Acid (PFPeA)	6.27		ng/l	1.90	0.376	1
Perfluorobutanesulfonic Acid (PFBS)	0.277	J	ng/l	1.90	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.90	0.429	1
Perfluorohexanoic Acid (PFHxA)	8.30		ng/l	1.90	0.311	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.90	0.233	1
Perfluoroheptanoic Acid (PFHpA)	2.65		ng/l	1.90	0.214	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.90	0.357	1
Perfluorooctanoic Acid (PFOA)	11.0		ng/l	1.90	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.90	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.90	0.653	1
Perfluorononanoic Acid (PFNA)	2.98		ng/l	1.90	0.296	1
Perfluorooctanesulfonic Acid (PFOS)	25.2		ng/l	1.90	0.478	1
Perfluorodecanoic Acid (PFDA)	0.573	J	ng/l	1.90	0.289	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.90	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.90	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.90	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.90	0.247	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.90	0.930	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.90	0.551	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.90	0.763	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.90	0.353	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.90	0.311	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.90	0.235	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.5	21.6	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.90	0.319	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.80	1.18	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-20  
 Client ID: OX-03\_20211116  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/16/21 10:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.80	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	141		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	66		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	103		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	72		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-21  
 Client ID: PE-01\_12032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 12/03/21 11:59  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 06:40  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.79		ng/l	1.92	0.391	1
Perfluoropentanoic Acid (PFPeA)	0.944	J	ng/l	1.92	0.380	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.228	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.434	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.315	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.235	1
Perfluoroheptanoic Acid (PFHpA)	0.372	J	ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.361	1
Perfluorooctanoic Acid (PFOA)	0.614	J	ng/l	1.92	0.226	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.660	1
Perfluorononanoic Acid (PFNA)	1.86	J	ng/l	1.92	0.299	1
Perfluorooctanesulfonic Acid (PFOS)	2.21		ng/l	1.92	0.484	1
Perfluorodecanoic Acid (PFDA)	0.395	J	ng/l	1.92	0.292	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.622	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.249	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.940	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.556	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.771	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.357	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.314	1
Perfluorotetradecanoic Acid (PFTA)	0.729	J	ng/l	1.92	0.238	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.0	21.8	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.92	0.322	1
Perfluorohexadecanoic Acid (PFHxDA)	1.42	JF	ng/l	3.84	1.19	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-21  
 Client ID: PE-01\_12032021  
 Sample Location: VARIOUS, MAINE

Date Collected: 12/03/21 11:59  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.84	1.10	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	118		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>167</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	112		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	114		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	71		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-22  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 06:57  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.802	J	ng/l	1.96	0.399	1
Perfluoropentanoic Acid (PFPeA)	0.775	J	ng/l	1.96	0.387	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.233	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.442	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.96	0.321	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.240	1
Perfluoroheptanoic Acid (PFHpA)	0.516	J	ng/l	1.96	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.368	1
Perfluorooctanoic Acid (PFOA)	1.26	J	ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.673	1
Perfluorononanoic Acid (PFNA)	0.708	J	ng/l	1.96	0.305	1
Perfluorooctanesulfonic Acid (PFOS)	0.771	J	ng/l	1.96	0.493	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.634	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.958	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.567	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.786	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.364	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.320	1
Perfluorotetradecanoic Acid (PFTA)	0.602	J	ng/l	1.96	0.242	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.9	22.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.96	0.329	1
Perfluorohexadecanoic Acid (PFHxDA)	1.69	JF	ng/l	3.91	1.21	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-22  
 Client ID: PI-01\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 12:50  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.91	1.12	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	64		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	68		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>55</b>	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	63		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	56		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-23  
 Client ID: PI-02\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:05  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 07:30  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.27	J	ng/l	1.96	0.399	1
Perfluoropentanoic Acid (PFPeA)	1.25	J	ng/l	1.96	0.387	1
Perfluorobutanesulfonic Acid (PFBS)	0.728	J	ng/l	1.96	0.233	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.442	1
Perfluorohexanoic Acid (PFHxA)	0.794	J	ng/l	1.96	0.321	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.240	1
Perfluoroheptanoic Acid (PFHpA)	1.25	J	ng/l	1.96	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.368	1
Perfluorooctanoic Acid (PFOA)	2.88		ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.673	1
Perfluorononanoic Acid (PFNA)	2.03		ng/l	1.96	0.305	1
Perfluorooctanesulfonic Acid (PFOS)	2.73		ng/l	1.96	0.493	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.634	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.958	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.567	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.786	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.364	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.320	1
Perfluorotetradecanoic Acid (PFTA)	0.661	J	ng/l	1.96	0.242	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.9	22.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.96	0.328	1
Perfluorohexadecanoic Acid (PFHxDA)	1.68	JF	ng/l	3.91	1.21	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-23  
 Client ID: PI-02\_20211119  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/19/21 10:05  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.91	1.12	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	69		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	55		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-24  
 Client ID: PI-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 08:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 08:03  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.17		ng/l	1.94	0.397	1
Perfluoropentanoic Acid (PFPeA)	1.24	J	ng/l	1.94	0.385	1
Perfluorobutanesulfonic Acid (PFBS)	0.614	J	ng/l	1.94	0.231	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.94	0.439	1
Perfluorohexanoic Acid (PFHxA)	0.937	J	ng/l	1.94	0.319	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	0.238	1
Perfluoroheptanoic Acid (PFHpA)	1.75	J	ng/l	1.94	0.219	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.366	1
Perfluorooctanoic Acid (PFOA)	4.16		ng/l	1.94	0.229	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.669	1
Perfluorononanoic Acid (PFNA)	1.79	J	ng/l	1.94	0.303	1
Perfluorooctanesulfonic Acid (PFOS)	1.38	J	ng/l	1.94	0.490	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.296	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.94	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.630	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.253	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.953	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.564	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.782	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.362	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.318	1
Perfluorotetradecanoic Acid (PFTA)	0.607	J	ng/l	1.94	0.241	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.6	22.1	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.94	0.327	1
Perfluorohexadecanoic Acid (PFHxDA)	1.52	JF	ng/l	3.89	1.20	1



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-24  
 Client ID: PI-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 08:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.89	1.12	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	75		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	78		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	58		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-25  
 Client ID: SA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 08:19  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.74	J	ng/l	1.87	0.381	1
Perfluoropentanoic Acid (PFPeA)	2.18		ng/l	1.87	0.370	1
Perfluorobutanesulfonic Acid (PFBS)	0.429	J	ng/l	1.87	0.222	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.422	1
Perfluorohexanoic Acid (PFHxA)	2.68		ng/l	1.87	0.306	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.229	1
Perfluoroheptanoic Acid (PFHpA)	6.06		ng/l	1.87	0.210	1
Perfluorohexanesulfonic Acid (PFHxS)	0.907	J	ng/l	1.87	0.351	1
Perfluorooctanoic Acid (PFOA)	57.7		ng/l	1.87	0.220	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.642	1
Perfluorononanoic Acid (PFNA)	57.6		ng/l	1.87	0.291	1
Perfluorooctanesulfonic Acid (PFOS)	45.6		ng/l	1.87	0.470	1
Perfluorodecanoic Acid (PFDA)	23.2		ng/l	1.87	0.284	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	1.13	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.87	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	0.605	1
Perfluoroundecanoic Acid (PFUnA)	2.30		ng/l	1.87	0.243	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.914	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	0.541	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.750	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.347	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.305	1
Perfluorotetradecanoic Acid (PFTA)	0.720	J	ng/l	1.87	0.231	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.7	21.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	0.314	1
Perfluorohexadecanoic Acid (PFHxDA)	1.46	JF	ng/l	3.73	1.16	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-25  
 Client ID: SA-02\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 08:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.73	1.07	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>174</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	87		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	63		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-26  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 08:36  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.26		ng/l	1.97	0.401	1
Perfluoropentanoic Acid (PFPeA)	0.893	J	ng/l	1.97	0.389	1
Perfluorobutanesulfonic Acid (PFBS)	0.555	J	ng/l	1.97	0.234	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.97	0.444	1
Perfluorohexanoic Acid (PFHxA)	1.05	J	ng/l	1.97	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.97	0.241	1
Perfluoroheptanoic Acid (PFHpA)	1.46	J	ng/l	1.97	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.97	0.370	1
Perfluorooctanoic Acid (PFOA)	4.29		ng/l	1.97	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.97	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.97	0.677	1
Perfluorononanoic Acid (PFNA)	2.18		ng/l	1.97	0.307	1
Perfluorooctanesulfonic Acid (PFOS)	2.49		ng/l	1.97	0.496	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.97	0.299	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.97	1.19	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.97	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.97	0.637	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.97	0.256	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.97	0.964	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.97	0.791	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.97	0.366	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.97	0.322	1
Perfluorotetradecanoic Acid (PFTA)	0.692	J	ng/l	1.97	0.244	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.2	22.3	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.97	0.330	1
Perfluorohexadecanoic Acid (PFHxDA)	1.66	JF	ng/l	3.93	1.22	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.93	1.13	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-26  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	67		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	65		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-26  
 Client ID: SA-03\_11092021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/09/21 09:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:19  
 Analyst: SG

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.97	0.570	1
<b>Surrogate (Extracted Internal Standard)</b>			<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			80		10-112	

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-27  
 Client ID: SO-03\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 11:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 08:53  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.534	J	ng/l	2.04	0.416	1
Perfluoropentanoic Acid (PFPeA)	0.849	J	ng/l	2.04	0.404	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.04	0.243	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.04	0.461	1
Perfluorohexanoic Acid (PFHxA)	0.514	JF	ng/l	2.04	0.334	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.04	0.250	1
Perfluoroheptanoic Acid (PFHpA)	0.894	J	ng/l	2.04	0.230	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.04	0.384	1
Perfluorooctanoic Acid (PFOA)	2.26		ng/l	2.04	0.241	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.04	1.36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.04	0.702	1
Perfluorononanoic Acid (PFNA)	2.19		ng/l	2.04	0.318	1
Perfluorooctanesulfonic Acid (PFOS)	2.32	F	ng/l	2.04	0.514	1
Perfluorodecanoic Acid (PFDA)	0.314	J	ng/l	2.04	0.310	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.04	1.24	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	2.04	1.14	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.04	0.661	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.04	0.265	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.04	1.00	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.04	0.592	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.04	0.820	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.04	0.379	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.04	0.334	1
Perfluorotetradecanoic Acid (PFTA)	0.751	J	ng/l	2.04	0.253	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	51.0	23.2	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.04	0.343	1
Perfluorohexadecanoic Acid (PFHxDA)	1.70	JF	ng/l	4.08	1.26	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-27  
 Client ID: SO-03\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 11:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.08	1.17	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	106		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	76		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	57		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-28  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 09:26  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.852	J	ng/l	1.94	0.395	1
Perfluoropentanoic Acid (PFPeA)	0.441	J	ng/l	1.94	0.383	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.94	0.230	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.94	0.438	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.94	0.318	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.94	0.237	1
Perfluoroheptanoic Acid (PFHpA)	0.403	J	ng/l	1.94	0.218	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.94	0.364	1
Perfluorooctanoic Acid (PFOA)	0.573	J	ng/l	1.94	0.228	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.94	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.94	0.666	1
Perfluorononanoic Acid (PFNA)	0.922	J	ng/l	1.94	0.302	1
Perfluorooctanesulfonic Acid (PFOS)	0.492	J	ng/l	1.94	0.488	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.94	0.294	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.94	1.17	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.94	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.94	0.627	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.94	0.252	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.94	0.949	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.94	0.778	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.94	0.360	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.94	0.317	1
Perfluorotetradecanoic Acid (PFTA)	0.774	J	ng/l	1.94	0.240	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.4	22.0	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.94	0.325	1
Perfluorohexadecanoic Acid (PFHxDA)	1.80	JF	ng/l	3.87	1.20	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.87	1.11	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-28  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	61		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	48		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	69		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	56		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-28  
 Client ID: SO-04\_11112021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/11/21 10:30  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:26  
 Analyst: SG

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.94	0.562	1
<b>Surrogate (Extracted Internal Standard)</b>			<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			78		10-112	

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-29  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 09:42  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.25		ng/l	1.85	0.378	1
Perfluoropentanoic Acid (PFPeA)	0.746	J	ng/l	1.85	0.367	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.85	0.221	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.85	0.419	1
Perfluorohexanoic Acid (PFHxA)	0.341	JF	ng/l	1.85	0.304	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.85	0.227	1
Perfluoroheptanoic Acid (PFHpA)	0.386	J	ng/l	1.85	0.209	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.85	0.349	1
Perfluorooctanoic Acid (PFOA)	0.367	J	ng/l	1.85	0.219	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.85	1.24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.85	0.638	1
Perfluorononanoic Acid (PFNA)	0.508	J	ng/l	1.85	0.289	1
Perfluorooctanesulfonic Acid (PFOS)	0.542	J	ng/l	1.85	0.467	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.85	0.282	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.85	1.12	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.85	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.85	0.601	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.85	0.241	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.85	0.909	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.85	0.746	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.85	0.345	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.85	0.303	1
Perfluorotetradecanoic Acid (PFTA)	0.742	J	ng/l	1.85	0.230	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.4	21.0	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.85	0.312	1
Perfluorohexadecanoic Acid (PFHxDA)	1.66	J	ng/l	3.71	1.15	1
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.71	1.06	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-29  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	99		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	59		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	70		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-29  
 Client ID: WL-03\_11102021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/10/21 10:40  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 17:33  
 Analyst: SG

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	0.538	1
<b>Surrogate (Extracted Internal Standard)</b>			<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			86		10-112	

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-30  
 Client ID: WS-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:05  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 09:59  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.792	J	ng/l	1.89	0.386	1
Perfluoropentanoic Acid (PFPeA)	0.758	J	ng/l	1.89	0.375	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.225	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.428	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.311	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.232	1
Perfluoroheptanoic Acid (PFHpA)	0.288	J	ng/l	1.89	0.213	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.356	1
Perfluorooctanoic Acid (PFOA)	0.280	J	ng/l	1.89	0.224	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.652	1
Perfluorononanoic Acid (PFNA)	0.640	J	ng/l	1.89	0.296	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.477	1
Perfluorodecanoic Acid (PFDA)	0.307	J	ng/l	1.89	0.288	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.614	1
Perfluoroundecanoic Acid (PFUnA)	0.280	J	ng/l	1.89	0.246	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.928	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.549	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.762	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.352	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.310	1
Perfluorotetradecanoic Acid (PFTA)	0.648	J	ng/l	1.89	0.235	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.4	21.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.89	0.318	1
Perfluorohexadecanoic Acid (PFHxDA)	1.74	JF	ng/l	3.79	1.17	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-30  
 Client ID: WS-01\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 10:05  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.79	1.09	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>195</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	113		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>5</b>	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	60		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-31  
 Client ID: WS-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 10:15  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.97		ng/l	1.95	0.397	1
Perfluoropentanoic Acid (PFPeA)	1.64	J	ng/l	1.95	0.385	1
Perfluorobutanesulfonic Acid (PFBS)	0.237	J	ng/l	1.95	0.232	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.95	0.440	1
Perfluorohexanoic Acid (PFHxA)	1.04	JF	ng/l	1.95	0.319	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.95	0.239	1
Perfluoroheptanoic Acid (PFHpA)	1.26	J	ng/l	1.95	0.219	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.95	0.366	1
Perfluorooctanoic Acid (PFOA)	1.88	J	ng/l	1.95	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.95	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.670	1
Perfluorononanoic Acid (PFNA)	1.79	J	ng/l	1.95	0.304	1
Perfluorooctanesulfonic Acid (PFOS)	1.56	J	ng/l	1.95	0.490	1
Perfluorodecanoic Acid (PFDA)	0.339	JF	ng/l	1.95	0.296	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.95	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.631	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.253	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.954	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.95	0.564	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.95	0.782	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.95	0.362	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.318	1
Perfluorotetradecanoic Acid (PFTA)	0.716	J	ng/l	1.95	0.241	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.7	22.1	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.95	0.327	1
Perfluorohexadecanoic Acid (PFHxDA)	1.71	JF	ng/l	3.89	1.21	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-31  
 Client ID: WS-04\_20211118  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/18/21 15:00  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.89	1.12	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	65		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	55		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-32  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 10:32  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.98	0.404	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.98	0.393	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.236	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.448	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.98	0.325	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.243	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.98	0.223	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.373	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.98	0.234	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.682	1
Perfluorononanoic Acid (PFNA)	0.369	J	ng/l	1.98	0.309	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.98	0.500	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.98	0.301	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.98	0.642	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.258	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.972	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.575	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.797	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.369	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.324	1
Perfluorotetradecanoic Acid (PFTA)	0.758	J	ng/l	1.98	0.246	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.6	22.5	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.98	0.333	1
Perfluorohexadecanoic Acid (PFHxDA)	1.70	J	ng/l	3.97	1.23	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-32  
 Client ID: YO-01\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 13:15  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.97	1.14	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	84		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-33  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 134,LCMSMS-ID  
 Analytical Date: 03/02/22 10:49  
 Analyst: HT

Extraction Method: ALPHA 23528  
 Extraction Date: 03/01/22 16:15

TCLP/SPLP Ext. Date: 02/19/22 16:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.98		ng/l	1.96	0.400	1
Perfluoropentanoic Acid (PFPeA)	1.56	J	ng/l	1.96	0.388	1
Perfluorobutanesulfonic Acid (PFBS)	0.514	J	ng/l	1.96	0.233	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.443	1
Perfluorohexanoic Acid (PFHxA)	0.710	JF	ng/l	1.96	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.240	1
Perfluoroheptanoic Acid (PFHpA)	1.29	J	ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	1.39	J	ng/l	1.96	0.232	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.675	1
Perfluorononanoic Acid (PFNA)	4.01		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	2.88		ng/l	1.96	0.494	1
Perfluorodecanoic Acid (PFDA)	0.761	JF	ng/l	1.96	0.298	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.636	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.961	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.569	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.789	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	0.820	J	ng/l	1.96	0.243	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	49.0	22.3	1
4,8-Dioxo-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.96	0.330	1
Perfluorohexadecanoic Acid (PFHxDA)	1.77	J	ng/l	3.92	1.22	1

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**SAMPLE RESULTS**

Lab ID: L2208579-33  
 Client ID: YO-04\_11082021  
 Sample Location: VARIOUS, MAINE

Date Collected: 11/08/21 12:20  
 Date Received: 02/17/22  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution &amp; EPA 1312 - Mansfield Lab</b>						
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.92	1.13	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>182</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	115		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>8</b>	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	85		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	56		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 13:09  
Analyst: RS  
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 10:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-20 Batch: WG1610094-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 13:09  
Analyst: RS  
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 10:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-20 Batch: WG1610094-1					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	114		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	126		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	122		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>147</b>	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	111		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	113		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	116		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	121		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	117		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	126		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	113		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	109		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	97		10-206



**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 13:26  
Analyst: RS  
TCLP/SPLP Extraction Date: 02/19/22 16:11

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 10:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-20 Batch: WG1610094-5					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.04	0.417
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.04	0.404
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.04	0.243
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.04	0.462
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.04	0.335
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.04	0.250
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.04	0.230
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.04	0.384
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.04	0.241
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.04	1.36
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.04	0.703
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.04	0.319
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.04	0.515
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.04	0.310
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.04	1.24
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.04	1.14
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.04	0.662
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.04	0.266
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.04	1.00
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.04	0.592
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.04	0.821
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.04	0.380
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.04	0.334
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.04	0.253
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	51.1	23.2
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.04	0.343

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 13:26  
Analyst: RS  
TCLP/SPLP Extraction Date: 02/19/22 16:11

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 10:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 01-20 Batch: WG1610094-5					
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.08	1.27
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.08	1.17

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	142		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	111		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	80		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 05:50  
Analyst: HT  
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 21-33 Batch: WG1610215-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	0.600	J	ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	0.672	J	ng/l	2.00	0.248
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	22.7
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	0.336

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 05:50  
Analyst: HT  
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 21-33 Batch: WG1610215-1					
Perfluorohexadecanoic Acid (PFHxDA)	1.42	JF	ng/l	4.00	1.24
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	1.15

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	100		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	89		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 17:04  
Analyst: SG  
TCLP/SPLP Extraction Date:

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 21-33 Batch: WG1610215-1					
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	81		10-112

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 06:23  
Analyst: HT  
TCLP/SPLP Extraction Date: 02/19/22 16:11

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 21-33 Batch: WG1610215-5					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.88	0.384
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.88	0.373
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	0.224
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.88	0.426
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	0.309
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	0.231
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.354
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.648
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.294
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	0.475
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.88	1.06
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.610
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.245
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.923
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.546
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.758
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308
Perfluorotetradecanoic Acid (PFTA)	0.618	J	ng/l	1.88	0.234
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	47.1	21.4
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.88	0.316

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID  
Analytical Date: 03/02/22 06:23  
Analyst: HT  
TCLP/SPLP Extraction Date: 02/19/22 16:11

Extraction Method: ALPHA 23528  
Extraction Date: 03/01/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab for sample(s): 21-33 Batch: WG1610215-5					
Perfluorohexadecanoic Acid (PFHxDA)	1.58	J	ng/l	3.77	1.17
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	3.77	1.08

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	117		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	118		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	91		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	97		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	89		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	62		10-206

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 Batch: WG1610094-2								
Perfluorobutanoic Acid (PFBA)	94		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	94		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	92		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	93		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	95		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	101		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	84		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	92		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	90		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	90		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	99		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	100		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	88		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	95		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	84		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	99		-		67-153	-		30



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 Batch: WG1610094-2								
Perfluorotridecanoic Acid (PFTrDA)	101		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	92		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	95		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	90		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	82		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	7	Q	-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 Batch: WG1610094-2									

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	112				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154	Q			12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	106				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	153	Q			14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	143				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	125				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	102				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	101				10-206

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 Batch: WG1610215-2								
Perfluorobutanoic Acid (PFBA)	96		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	106		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	87		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	96		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	91		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	93		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	87		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	95		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	90		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	83		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	120		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	95		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	91		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	94		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	82		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	88		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	81		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	97		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	86		-		67-153	-		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 Batch: WG1610215-2								
Perfluorotridecanoic Acid (PFTrDA)	75		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	80		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	92		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	107		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	92		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	15		-		10-119	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: MAINE BACKGROUND SOILS STUDY

Lab Number: L2208579

Project Number: 5060.00

Report Date: 03/07/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits			Qual	Limits

SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 Batch: WG1610215-2

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	115				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	126				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	96				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	124				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	114				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	102				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	105				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	124				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	113				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	107				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	86				10-206

**Lab Control Sample Analysis**  
Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 Batch: WG1610215-2								
Perfluorooctanesulfonamide (FOSA)	104		-		46-170	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	85				10-112



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2208579

**Project Number:** 5060.00

**Report Date:** 03/07/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-3 QC Sample: L2208579-01 Client ID: AN-02_20211118												
Perfluorobutanoic Acid (PFBA)	0.390J	38.4	36.0	93		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	38.4	35.3	92		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.357J	34.1	32.5	94		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.9	36.2	101		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	0.548J	38.4	36.0	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	36	31.9	88		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.912J	38.4	37.0	94		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.482J	35	34.4	97		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	2.78	38.4	36.2	87		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	36.5	35.2	96		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	36.5	34.0	93		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	1.71J	38.4	34.4	85		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	6.53	35.6	37.6	87		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.320JF	38.4	37.1	96		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.8	38.3	104		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.9	34.8	94		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	38.4	35.6	93		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.4	34.4	90		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	37	31.4	85		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	38.4	39.0	102		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	38.4	34.7	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	38.4	40.0	104		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Lab Number:** L2208579

**Project Number:** 5060.00

**Report Date:** 03/07/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-3 QC Sample: L2208579-01 Client ID: AN-02_20211118												
Perfluorotridecanoic Acid (PFTrDA)	ND	38.4	42.8	112		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	38.4	39.9	104		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	374	358	96		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	36.2	32.4	90		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	38.4	31.7	83		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	38.4	6.20	16		-	-		10-119	-		30

<b>Surrogate (Extracted Internal Standard)</b>	<b>MS % Recovery</b>	<b>Qualifier</b>	<b>MSD % Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	129				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	185	Q			12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	174	Q			14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	89				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	98				10-206



### Matrix Spike Analysis Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-3 QC Sample: L2208579-01 Client ID: AN-02\_20211118

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	115				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118				70-131



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-3 QC Sample: L2208579-22 Client ID: PI-01_11102021												
Perfluorobutanoic Acid (PFBA)	0.802J	37.7	36.0	93		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	0.775J	37.7	40.8	106		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	33.4	29.8	89		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	35.3	33.8	96		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	37.7	34.9	93		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	35.4	32.4	92		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.516J	37.7	33.2	87		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	34.4	31.4	91		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	1.26J	37.7	35.6	91		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35.9	34.3	96		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	35.9	29.5	82		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.708J	37.7	46.4	121		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.771J	35	35.0	98		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	37.7	32.9	87		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	36.2	31.2	86		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	36.2	29.4	81		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	37.7	34.4	91		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	37.7	30.0	80		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	36.3	29.7	82		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	37.7	32.5F	86		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	37.7	34.1	90		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	37.7	32.5	86		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-3 QC Sample: L2208579-22 Client ID: PI-01_11102021												
Perfluorotridecanoic Acid (PFTrDA)	ND	37.7	27.4	73		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	0.602J	37.7	27.8	72		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	367	382	104		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	35.6	37.3	105		-	-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	1.69JF	37.7	32.2	81		-	-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	ND	37.7	15.4F	41		-	-		10-119	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	123				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89				14-147
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	62				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	61				10-206

**Matrix Spike Analysis**  
*Batch Quality Control*

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-3 QC Sample: L2208579-22 Client ID: PI-01\_11102021

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
Perfluoro[13C4]Butanoic Acid (MPFBA)	72				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>58</b>	Q			59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111				70-131



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-4 QC Sample: L2208579-03 Client ID: AR-01_20211115						
Perfluorobutanoic Acid (PFBA)	2.09	2.09	ng/l	0		30
Perfluoropentanoic Acid (PFPeA)	1.01J	1.00J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.258J	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.930J	0.843J	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.28J	1.20J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	2.14F	1.88J	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	0.636JF	0.386J	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	3.98	3.63	ng/l	9		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-4 QC Sample: L2208579-03 Client ID: AR-01_20211115						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		127		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	156	Q	156	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		81		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		130		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		96		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	151	Q	151	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	120		119		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	134		131		10-162

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG1610094-4 QC Sample: L2208579-03 Client ID: AR-01_20211115						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3	Q	6	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		77		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		88		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		84		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	61		78		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	82		89		10-206

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY

**Project Number:** 5060.00

**Lab Number:** L2208579

**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-4 QC Sample: L2208579-23 Client ID: PI-02_20211119						
Perfluorobutanoic Acid (PFBA)	1.27J	1.28J	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	1.25J	1.06J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.728J	0.735J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	0.794J	0.708J	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.25J	1.16J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	2.88	2.82	ng/l	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	2.03	1.96	ng/l	4		30
Perfluorooctanesulfonic Acid (PFOS)	2.73	2.41	ng/l	12		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-4 QC Sample: L2208579-23 Client ID: PI-02_20211119						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.661J	0.688J	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	1.68JF	1.75JF	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		70		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		81		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		116		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		114		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	73		73		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78		78		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		62		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		107		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		82		10-162

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution & EPA 1312 - Mansfield Lab Associated sample(s): 21-33 QC Batch ID: WG1610215-4 QC Sample: L2208579-23 Client ID: PI-02_20211119						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		54		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		89		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		9	Q	10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		85		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	69		70		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	55		56		10-206

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2208579**Project Number:** 5060.00**Report Date:** 03/07/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
C	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-01A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-01X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-01X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-01X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-01X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-01X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-02A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-02X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-02X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-02X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-02X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-02X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-03A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-03X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-03X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-03X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-03X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-03X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-04A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-04X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-04X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-04X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-04X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2208579**Project Number:** 5060.00**Report Date:** 03/07/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-04X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-05A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-05X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-05X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-05X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-05X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-05X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-06A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-06X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-06X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-06X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-06X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-06X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-07A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-07X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-07X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-07X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-07X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-07X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-08A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-08X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-08X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-08X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-08X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-08X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-09A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-09X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-09X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2208579**Project Number:** 5060.00**Report Date:** 03/07/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-09X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-09X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-09X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-10A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-10X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-10X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-10X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-10X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-10X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-11A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-11X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-11X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-11X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-11X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-11X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-12A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-12X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-12X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-12X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-12X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-12X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-13A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-13X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-13X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-13X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-13X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-13X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-14A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-

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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-14X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-14X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-14X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-14X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-14X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-15A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-15X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-15X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-15X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-15X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-15X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-16A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-16X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-16X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-16X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-16X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-16X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-17A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-17X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-17X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-17X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-17X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-17X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-18A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-18X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-18X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-18X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-18X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)

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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-18X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-19A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-19X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-19X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-19X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-19X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-19X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-20A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-20X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-20X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-20X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-20X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-20X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-21A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-21X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-21X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-21X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-21X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-21X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-22A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-22X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-22X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-22X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-22X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-22X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-23A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-23X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-23X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)

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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-23X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-23X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-23X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-24A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-24X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-24X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-24X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-24X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-24X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-25A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-25X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-25X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-25X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-25X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-25X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-26A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-26X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-26X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-26X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-26X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-26X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-27A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-27X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-27X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-27X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-27X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-27X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-28A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-



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<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-28X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-28X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-28X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-28X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-28X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-29A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-29X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-29X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-29X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-29X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-29X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-30A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-30X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-30X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-30X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-30X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-30X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-31A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-31X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-31X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-31X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-31X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-31X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-32A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-32X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-32X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-32X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-32X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)

**Project Name:** MAINE BACKGROUND SOILS STUDY**Lab Number:** L2208579**Project Number:** 5060.00**Report Date:** 03/07/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2208579-32X9	Tumble Vessel	C	NA		2.1	Y	Absent		-
L2208579-33A	Plastic 8oz unpreserved	C	NA		2.1	Y	Absent		-
L2208579-33X	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-33X1	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-33X2	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-33X3	Plastic 250ml unpreserved Extracts	C	NA		2.1	Y	Absent		A2-SPLP-537-ISOTOPE(14)
L2208579-33X9	Tumble Vessel	C	NA		2.1	Y	Absent		-

**PFAS PARAMETER SUMMARY**

Parameter	Acronym	CAS Number
<b>PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)</b>		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	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
<b>PERFLUOROALKYL SULFONIC ACIDS (PFSAs)</b>		
Perfluorododecanesulfonic Acid	PFDoDS	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
<b>FLUOROTELOMERS</b>		
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
<b>PERFLUOROALKANE SULFONAMIDES (FASAs)</b>		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
<b>PERFLUOROALKANE SULFONYL SUBSTANCES</b>		
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
<b>PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS</b>		
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
<b>CHLORO-PERFLUOROALKYL SULFONIC ACIDS</b>		
11-Chloroeicosafuoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
<b>PERFLUOROETHER SULFONIC ACIDS (PFESAs)</b>		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEEESA	113507-82-7
<b>PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)</b>		
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:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

## 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:** MAINE BACKGROUND SOILS STUDY  
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#### 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:** MAINE BACKGROUND SOILS STUDY  
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**Report Date:** 03/07/22

**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.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** MAINE BACKGROUND SOILS STUDY  
**Project Number:** 5060.00

**Lab Number:** L2208579  
**Report Date:** 03/07/22

## REFERENCES

- 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.



## 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-Terpeneol

**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-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### 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, **LCHAT 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.





# CHAIN OF CUSTODY

PAGE 1 OF 4

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)  
Between 11/11/2021 and 2/15/2022, samples were stored at -20 degrees C.

Date Rec'd in Lab: 2/17/22

ALPHA Job #: REM022208579

## Report Information Data Deliverables

FAX  EMAIL  
 ADEK  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SPLP - PFAS: 537 iso dil. - 28 List	Percent Solids														
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SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
08578-01	AN-02_20211118	11/18/21	11:45	SO	
-02	AN-03_20211118	11/18/21	10:35	SO	
03	AR-01_20211115	11/15/21	13:00	SO	
04	CU-03_11082021	11/8/21	14:10	SO	
05	FR-02_20211116	11/16/21	14:25	SO	
06	FR-03_20211116	11/16/21	11:50	SO	
07	HA-01_20211118	11/18/21	18:00	SO	
08	HA-02_20211118	11/18/21	8:00	SO	
09	HA-03_20211118	11/18/21	17:00	SO	
-10	HA-04_20211118	11/18/21	9:00	SO	

Container Type	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 2-17-22 1420  
Received By: [Signature] Date/Time: 2-17-22 1330

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

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2/17/22

# CHAIN OF CUSTODY

PAGE 2 OF 4



## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3286

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)  
 Between 11/11/2021 and 2/15/2022, samples were stored at -20 degrees C.

Date Rec'd in Lab: 2/17/22

ALPHA Job #: REM02 L2208579

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

## ANALYSIS

SPLP - PFAS: 537 iso dil. - 28 List	Percent Solids														
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
08579-61	KE-01_20211117	11/17/21	11:20	SO	
-12	KE-04_20211117	11/17/21	9:10	SO	
-13	KN-02_11092021	11/9/21	14:10	SO	
-14	KN-03_11102021	11/10/21	8:45	SO	
-15	LI-02_20211117	11/17/21	15:00	SO	
-16	LI-03_11092021	11/9/21	11:45	SO	
-17	LI-04_11092021	11/9/21	12:30	SO	
-18	OX-01_20211115	11/15/21	16:00	SO	
-19	OX-02_20211115	11/15/21	15:00	SO	
-20	OX-03_20211116	11/16/21	10:20	SO	

Container Type	P	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	0	0	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Troy Smith</i>	2-17-22 14:20	<i>M. Cluffer</i>	2-17-22 13:30
<i>M. Cluffer</i>	2-17-22 14:20	<i>John Jacobs</i>	2/17/22 15:00
<i>John Jacobs</i>	2/17/22 15:00	<i>John Jacobs</i>	2/17/22 15:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 4

## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)  
 Between 11/11/2021 and 2/15/2022, samples were stored at -20 degrees C.

Date Rec'd in Lab: 2/17/22 (CP)

ALPHA Job #: REM02 L2208579

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria

## ANALYSIS

SPLP - PFAS: 537 iso dil. - 28 List	Percent Solids														
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
08579-21	PE-01_12032021	12/3/21	11:59	SO	
-22	PI-01_11102021	11/10/21	12:50	SO	
-23	PI-02_20211119	11/19/21	10:05	SO	
-24	PI-04_11112021	11/11/21	8:30	SO	
-25	SA-02_20211118	11/18/21	8:15	SO	
-26	SA-03_11092021	11/9/21	9:15	SO	
-27	SO-03_11112021	11/11/21	11:30	SO	
-28	SO-04_11112021	11/11/21	10:30	SO	
-29	WL-03_11102021	11/10/21	10:40	SO	
-30	WS-01_20211118	11/18/21	10:05	SO	

Container Type	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	2-17-22 14:20	<i>[Signature]</i>	2-17-22 13:30
<i>[Signature]</i>	2/17/22 15:00	<i>[Signature]</i>	2/17/22 15:00
<i>[Signature]</i>	2/17/22 15:55	<i>[Signature]</i>	2/17/22 15:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO 01-011(Rev) (rev 5-10-12)

2/17/22

# CHAIN OF CUSTODY

PAGE 4 OF 4



## Project Information

Project Name: Maine Background Soils Study

Project Location: Various, Maine

Project #: 5060.00

Project Manager: H. Roakes/ Troy Smith Maine

ALPHA Quote #: Maine DEP REM02

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Sanborn, Head & Associates for SOM

Address: 20 Foundry Street

Concord, NH 03301

Phone: 603-229-1900

Fax: 603-229-1919

Email: hroakes@sanbornhead.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Invoice the State of Maine, REM02, Troy.T.Smith@Maine.gov

Report detection to the MDL (e.g., include J-flags)

Between 11/11/2021 and 2/15/2022, samples were stored at -20 degrees C.

Date Rec'd in Lab: 2/18/22

ALPHA Job #: REM02 22208579

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: REM02

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SPLP - PFAS: 537 Iso dil. - 28 List	Percent Solids														
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
08579-31	WS-04_20211118	11/18/21	15:00	SO	
-32	YO-01_11082021	11/8/21	13:15	SO	
-33	YO-04_11082021	11/8/21	12:20	SO	

Container Type	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	O	O	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *Troy Smith* Date/Time: 2-17-22 14:20  
 Received By: *M. Stuffer* Date/Time: 2-17-22 13:30  
*John Jacobs* 2/17/22 15:00  
*R. [Signature]* 2/17/22 15:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO 01-01(MA) Rev. 5-JAN-12

## PFAS 28 List

Analyte	Acronym	CAS
perfluorooctadecanoic acid	PFODA	16517-11-6
perfluorohexadecanoic acid	PFHxDA	67905-19-5
perfluorotetradecanoic acid	PFTeA	376-06-7
perfluorotridecanoic acid	PFTTrA	72629-94-8
perfluorododecanoic acid	PFDoA	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
perfluorodecane sulfonic acid	PFDS	335-77-3
perfluorononanesulfonic acid	PFNS	68259-12-1
perfluorooctane sulfonic acid	PFOS	1763-23-1
perfluoroheptane sulfonic acid	PFHpS	375-92-8
perfluorohexane sulfonic acid	PFHxS	355-46-4
perfluoropentane sulfonic acid	PFPeS	2706-91-4
perfluorobutane sulfonic acid	PFBS	375-73-5
8:2 fluorotelomer sulfonic acid	8:2 FTSA	39108-34-4
6:2 fluorotelomer sulfonic acid	6:2 FTSA	27619-97-2
4:2 fluorotelomer sulfonic acid	4:2 FTSA	757124-72-4
Perfluorooctanesulfonamide	FOSA	754-91-6
N-ethyl perfluorooctanesulfonamido acetic acid	EtFOSAA	2991-50-6
N-methyl perfluorooctanesulfonamido acetic acid	MeFOSAA	2355-31-9
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid	HFPO-DA (GenX acid)	13252-13-6
4,8-dioxa-3h-perfluorononanoic acid	DONA (ADONA acid)	919005-14-4

## ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC  
2425 New Holland Pike  
Lancaster, PA 17601  
Tel: (717)656-2300

Laboratory Job ID: 410-73303-1

Client Project/Site: Maine Background Soils Study

**For:**

Sanborn Head & Associates Inc  
20 Foundry Street  
Concord, New Hampshire 03301

Attn: Harrison Roakes



*Authorized for release by:  
3/11/2022 10:49:10 AM*

Kelly Bauer, Project Manager  
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### LINKS

Review your project  
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*The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
  - Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
  - Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
- Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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Handwritten signature of Kelly Bauer in black ink.

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Kelly Bauer  
Project Manager  
3/11/2022 10:49:10 AM



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# Definitions/Glossary

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
cn	Refer to Case Narrative for further detail
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Case Narrative

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

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## Job ID: 410-73303-1

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Laboratory: Eurofins Lancaster Laboratories Env, LLC

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### Narrative

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#### Job Narrative 410-73303-1

#### Receipt

The samples were received on 2/17/2022 11:37 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.1°C

#### Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): PI-02\_20211119 (410-73303-7). The container labels list PI-02\_11102021, 11/10/2021, 1330, while the COC lists PI-02\_20211119, 11/19/2021, 10:05. Entered per COC

#### LCMS

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

#### PFAS

Method 537\_IDA\_TOPS: Target analytes were detected in the method blank associated with post oxidation samples: AR-01\_20211115 (410-73303-1), HA-03\_20211118 (410-73303-2), KE-01\_20211117 (410-73303-3), KE-04\_20211117 (410-73303-4), OX-03\_20211116 (410-73303-5), PI-01\_11102021 (410-73303-6), PI-02\_20211119 (410-73303-7), SA-02\_20211118 (410-73303-8) and SA-03\_11092021 (410-73303-9). No further action was taken.

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

#### General Chemistry

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



# Detection Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.36	J H H3 B cn	0.73	0.24	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorononanoic acid	0.64	J H H3 cn	0.73	0.24	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	1.3	H H3 cn	0.73	0.24	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanoic acid	0.29	J I H H3 cn	0.73	0.24	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.36				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.061				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.64				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	1.1				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.23	J	0.30	0.10	ng/g	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	1.3		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment
Perfluorooctanoic acid	0.23	J H H3	0.66	0.22	ng/g	1	✳	T-WI12031 r10	Pre-Treatment
Perfluorooctanesulfonic acid	0.66	H H3	0.66	0.22	ng/g	1	✳	T-WI12031 r10	Pre-Treatment

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.31	J I H H3 B cn	0.74	0.25	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorononanoic acid	0.32	J I H H3 cn	0.74	0.25	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	0.29	J H H3 cn	0.74	0.25	ng/g	1	✳	537 TOP	Post-Treatment
Perfluoropentanoic acid	0.25	J H H3 cn	0.74	0.25	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.25				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.31				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.32				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.88				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.88		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid	1.4	J H H3 cn	2.6	1.0	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorodecanoic acid	3.0	H H3 cn	0.79	0.26	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorododecanoic acid	0.74	J I H H3 cn	0.79	0.26	ng/g	1	✳	537 TOP	Post-Treatment
Perfluoroheptanoic acid	2.2	H H3 cn	0.79	0.26	ng/g	1	✳	537 TOP	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

## Detection Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-01\_20211117 (Continued)**

**Lab Sample ID: 410-73303-3**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanoic acid	2.4	H H3 B cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluorononanoic acid	2.3	I H H3 cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	2.1	H H3 cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluorooctanoic acid	6.1	H H3 cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluoropentanoic acid	0.99	H H3 cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluoroundecanoic acid	1.0	I H H3 cn	0.79	0.26	ng/g	1		*	537 TOP	Post-Treatment
Perfluorobutanoic acid	1.4				ng/g	1			Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.12				ng/g	1			Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.95				ng/g	1			Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.55				ng/g	1			Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	1.4				ng/g	1			Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.67				ng/g	1			Total PFCA-Dif	Total/NA
Total PFCA	5.1				ng/g	1			Total PFCA-Dif	Total/NA
Total PFCA	10		0.30	0.10	ng/g	1			Total PFCA-Sum	Pre-Treatment
Total PFCA	15		0.30	0.10	ng/g	1			Total PFCA-Sum	Post-Treatment
Perfluorohexanoic acid	1.5	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluoroheptanoic acid	1.6	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluorooctanoic acid	4.7	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluorononanoic acid	1.6	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluorodecanoic acid	2.0	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluorooctanesulfonic acid	0.94	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluoropentanoic acid	0.87	H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluoroundecanoic acid	0.64	J H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment
Perfluorododecanoic acid	0.60	J H H3	0.72	0.24	ng/g	1		*	T-WI12031 r10	Pre-Treatment

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
6:2 Fluorotelomer sulfonic acid	2.9	I H H3 cn	2.8	0.84	ng/g	1		*	537 TOP	Post-Treatment
8:2 Fluorotelomer sulfonic acid	2.2	J H H3 cn	4.2	0.84	ng/g	1		*	537 TOP	Post-Treatment
Perfluorodecanoic acid	0.87	H H3 cn	0.84	0.28	ng/g	1		*	537 TOP	Post-Treatment
Perfluoroheptanoic acid	5.9	I H H3 cn	0.84	0.28	ng/g	1		*	537 TOP	Post-Treatment
Perfluorohexanesulfonic acid	0.44	J H H3 cn	0.84	0.28	ng/g	1		*	537 TOP	Post-Treatment
Perfluorohexanoic acid	2.8	H H3 B cn	0.84	0.28	ng/g	1		*	537 TOP	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

## Detection Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-04\_20211117 (Continued)**

**Lab Sample ID: 410-73303-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid	92	I H H3 cn	0.84	0.28	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	1.9	H H3 cn	0.84	0.28	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanoic acid	4.3	I H H3 cn	0.84	0.28	ng/g	1	✳	537 TOP	Post-Treatment
Perfluoropentanoic acid	2.1	H H3 cn	0.84	0.28	ng/g	1	✳	537 TOP	Post-Treatment
Perfluoroundecanoic acid	3.3	I H H3 cn	0.84	0.28	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	2.1				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	2.8				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	5.9				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	3.7				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	91				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	110				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	1.2		0.30	0.10	ng/g	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	110		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment
Perfluorooctanoic acid	0.59	J H H3	0.84	0.28	ng/g	1	✳	T-WI12031 r10	Pre-Treatment
Perfluorononanoic acid	0.60	J H H3	0.84	0.28	ng/g	1	✳	T-WI12031 r10	Pre-Treatment
Perfluorooctanesulfonic acid	0.44	J H H3	0.84	0.28	ng/g	1	✳	T-WI12031 r10	Pre-Treatment

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid	0.33	J I H H3 cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorohexanoic acid	0.85	J H H3 B cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorononanoic acid	3.7	H H3 cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	5.0	H H3 cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorooctanoic acid	0.85	J I H H3 cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluoropentanoic acid	0.49	J H H3 cn	0.92	0.31	ng/g	1	✳	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.49				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.85				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.33				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.074				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	3.7				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	5.4				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.78		0.30	0.10	ng/g	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	6.2		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment
Perfluorooctanoic acid	0.78	J H H3	0.92	0.31	ng/g	1	✳	T-WI12031 r10	Pre-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

## Detection Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

### Client Sample ID: OX-03\_20211116 (Continued)

Lab Sample ID: 410-73303-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	4.0	H H3	0.92	0.31	ng/g	1	⊛	T-WI12031 r10	Pre-Treatment
NEtFOSAA	0.65	J H H3	3.1	0.31	ng/g	1	⊛	T-WI12031 r10	Pre-Treatment

### Client Sample ID: PI-01\_11102021

Lab Sample ID: 410-73303-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.43	J I H H3 B cn	0.93	0.31	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorononanoic acid	0.80	J I H H3 cn	0.93	0.31	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	0.49	J H H3 cn	0.93	0.31	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorooctanoic acid	0.40	J H H3 cn	0.93	0.31	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.43				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.40				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.80				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	1.6				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	1.6		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment

### Client Sample ID: PI-02\_20211119

Lab Sample ID: 410-73303-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.27	J H H3 B cn	0.68	0.23	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorooctanoic acid	0.23	J I H H3 cn	0.68	0.23	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.27				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.23				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.50				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.50		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment

### Client Sample ID: SA-02\_20211118

Lab Sample ID: 410-73303-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorodecanoic acid	4.6	I H H3 cn	0.86	0.29	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorododecanoic acid	0.92	I H H3 cn	0.86	0.29	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluoroheptanoic acid	0.34	J H H3 cn	0.86	0.29	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorohexanoic acid	0.66	J H H3 B cn	0.86	0.29	ng/g	1	⊛	537 TOP	Post-Treatment
Perfluorononanoic acid	2.5	I H H3 cn	0.86	0.29	ng/g	1	⊛	537 TOP	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

# Detection Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-02\_20211118 (Continued)**

**Lab Sample ID: 410-73303-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	3.3	H H3 cn	0.86	0.29	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorooctanoic acid	2.6	I H H3 cn	0.86	0.29	ng/g	1	☼	537 TOP	Post-Treatment
Perfluoroundecanoic acid	2.7	H H3 cn	0.86	0.29	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.66				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.34				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.76				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.90				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	2.7				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	3.4		0.30	0.10	ng/g	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	6.1		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment
Perfluorooctanoic acid	1.8	H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment
Perfluorononanoic acid	1.6	H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment
Perfluorodecanoic acid	2.2	H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment
Perfluorooctanesulfonic acid	1.8	H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment
Perfluoroundecanoic acid	1.5	H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment
Perfluorododecanoic acid	0.55	J H H3	0.95	0.32	ng/g	1	☼	T-WI12031 r10	Pre-Treatment

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid	0.38	J H H3 B cn	0.76	0.25	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorononanoic acid	0.26	J H H3 cn	0.76	0.25	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorooctanesulfonic acid	0.59	J H H3 cn	0.76	0.25	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorooctanoic acid	0.32	J I H H3 cn	0.76	0.25	ng/g	1	☼	537 TOP	Post-Treatment
Perfluorobutanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoropentanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorohexanoic acid	0.38				ng/g	1		Total PFCA-Dif	Total/NA
Perfluoroheptanoic acid	0.00				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorooctanoic acid	0.32				ng/g	1		Total PFCA-Dif	Total/NA
Perfluorononanoic acid	0.26				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.96				ng/g	1		Total PFCA-Dif	Total/NA
Total PFCA	0.96		0.30	0.10	ng/g	1		Total PFCA-Sum	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.3

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.4	0.73	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.4	0.73	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.6	0.73	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
DONA	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
HFPODA	ND	H H3 *+ cn	3.6	0.48	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
NEtFOSAA	ND	H H3 cn	2.4	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
NMeFOSAA	ND	H H3 cn	2.4	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.4	0.48	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorobutanoic acid	ND	H H3 cn	2.4	0.97	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorodecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorododecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoroheptanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
<b>Perfluorohexanoic acid</b>	<b>0.36</b>	<b>J H H3 B cn</b>	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoronanesulfonic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
<b>Perfluoronanoic acid</b>	<b>0.64</b>	<b>J H H3 cn</b>	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
<b>Perfluorooctanesulfonic acid</b>	<b>1.3</b>	<b>H H3 cn</b>	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
<b>Perfluorooctanoic acid</b>	<b>0.29</b>	<b>J I H H3 cn</b>	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoropentanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluorotridecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Perfluoroundecanoic acid	ND	H H3 cn	0.73	0.24	ng/g	✱	03/07/22 09:32	03/10/22 11:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-6:2 FTS	117	cn	10 - 200				03/07/22 09:32	03/10/22 11:17	1
M2-8:2 FTS	126	cn	15 - 200				03/07/22 09:32	03/10/22 11:17	1
13C2 PFTeDA	106	cn	10 - 169				03/07/22 09:32	03/10/22 11:17	1
13C3 HFPO-DA	82	cn	10 - 169				03/07/22 09:32	03/10/22 11:17	1
13C3 PFBS	96	cn	27 - 179				03/07/22 09:32	03/10/22 11:17	1
13C4 PFBA	101	cn	28 - 153				03/07/22 09:32	03/10/22 11:17	1
13C4 PFHpA	109	cn	10 - 178				03/07/22 09:32	03/10/22 11:17	1
13C5 PFPeA	105	cn	24 - 161				03/07/22 09:32	03/10/22 11:17	1
13C8 PFOA	99	cn	26 - 159				03/07/22 09:32	03/10/22 11:17	1
13C8 PFOS	107	cn	41 - 154				03/07/22 09:32	03/10/22 11:17	1
d5-NEtFOSAA	110	cn	10 - 193				03/07/22 09:32	03/10/22 11:17	1
13C3 PFHxS	101	cn	24 - 171				03/07/22 09:32	03/10/22 11:17	1
13C5 PFHxA	92	cn	10 - 174				03/07/22 09:32	03/10/22 11:17	1
13C6 PFDA	102	cn	26 - 161				03/07/22 09:32	03/10/22 11:17	1
13C7 PFUnA	109	cn	12 - 173				03/07/22 09:32	03/10/22 11:17	1
13C8 FOSA	110	cn	14 - 163				03/07/22 09:32	03/10/22 11:17	1
13C2-PFDoDA	100	cn	11 - 166				03/07/22 09:32	03/10/22 11:17	1
13C9 PFNA	119	cn	26 - 165				03/07/22 09:32	03/10/22 11:17	1



# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	87	cn	10 - 137	03/07/22 09:32	03/10/22 11:17	1
13C2 PFUnA	83	cn	10 - 143	03/07/22 09:32	03/10/22 11:17	1
13C4 PFOA	101	cn	10 - 146	03/07/22 09:32	03/10/22 11:17	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.36				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.061				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.64				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>1.1</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>0.23</b>	<b>J</b>	0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>1.3</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	22.7		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	22.7		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	17.6		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 82.4

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluoroheptanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
<b>Perfluorooctanoic acid</b>	<b>0.23</b>	<b>J H H3</b>	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorononanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorodecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorotridecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorotetradecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorobutanesulfonic acid	ND	H H3	2.2	0.44	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorohexanesulfonic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
<b>Perfluorooctanesulfonic acid</b>	<b>0.66</b>	<b>H H3</b>	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
NEtFOSAA	ND	H H3	2.2	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
NMeFOSAA	ND	H H3	2.2	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluoropentanesulfonic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluoroheptanesulfonic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorononanesulfonic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorodecanesulfonic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorooctanesulfonamide	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 82.4

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexadecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorooctadecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorobutanoic acid	ND	H H3	2.2	0.88	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluoropentanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
HFPODA	ND	H H3	2.2	0.44	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
DONA	ND	H H3	3.3	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluoroundecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.2	0.66	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
Perfluorododecanoic acid	ND	H H3	0.66	0.22	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	3.3	0.66	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.2	0.66	ng/g	☼	03/01/22 08:47	03/04/22 06:02	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	100		10 - 200	03/01/22 08:47	03/04/22 06:02	1
M2-8:2 FTS	115		15 - 200	03/01/22 08:47	03/04/22 06:02	1
M2-6:2 FTS	115		10 - 200	03/01/22 08:47	03/04/22 06:02	1
13C5 PFHxA	92		10 - 174	03/01/22 08:47	03/04/22 06:02	1
13C4 PFHpA	95		10 - 178	03/01/22 08:47	03/04/22 06:02	1
13C8 PFOA	97		26 - 159	03/01/22 08:47	03/04/22 06:02	1
13C9 PFNA	105		26 - 165	03/01/22 08:47	03/04/22 06:02	1
13C6 PFDA	106		26 - 161	03/01/22 08:47	03/04/22 06:02	1
13C7 PFUnA	108		12 - 173	03/01/22 08:47	03/04/22 06:02	1
13C2-PFDoDA	93		11 - 166	03/01/22 08:47	03/04/22 06:02	1
13C2 PFTeDA	97		10 - 169	03/01/22 08:47	03/04/22 06:02	1
13C3 PFBS	120		27 - 179	03/01/22 08:47	03/04/22 06:02	1
13C3 PFHxS	101		24 - 171	03/01/22 08:47	03/04/22 06:02	1
13C8 PFOS	103		41 - 154	03/01/22 08:47	03/04/22 06:02	1
d3-NMeFOSAA	65		10 - 178	03/01/22 08:47	03/04/22 06:02	1
d5-NEtFOSAA	82		10 - 193	03/01/22 08:47	03/04/22 06:02	1
13C8 FOSA	93		14 - 163	03/01/22 08:47	03/04/22 06:02	1
13C4 PFBA	93		28 - 153	03/01/22 08:47	03/04/22 06:02	1
13C5 PFPeA	105		24 - 161	03/01/22 08:47	03/04/22 06:02	1
13C3 HFPO-DA	80		10 - 169	03/01/22 08:47	03/04/22 06:02	1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.2

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluoroheptanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorooctanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorononanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorodecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorotridecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorotetradecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorobutanesulfonic acid	ND	H H3	2.5	0.50	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorohexanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorooctanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
NETFOSAA	ND	H H3	2.5	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.2

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NMeFOSAA	ND	H H3	2.5	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluoropentanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluoroheptanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorononanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorodecanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorooctanesulfonamide	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorohexadecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorooctadecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorobutanoic acid	ND	H H3	2.5	1.0	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluoropentanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
HFPODA	ND	H H3	2.5	0.50	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
DONA	ND	H H3	3.8	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluoroundecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.5	0.76	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
Perfluorododecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	3.8	0.76	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.5	0.76	ng/g	☼	03/01/22 08:47	03/04/22 06:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	114		10 - 200	03/01/22 08:47	03/04/22 06:13	1
M2-8:2 FTS	106		15 - 200	03/01/22 08:47	03/04/22 06:13	1
M2-6:2 FTS	111		10 - 200	03/01/22 08:47	03/04/22 06:13	1
13C5 PFHxA	86		10 - 174	03/01/22 08:47	03/04/22 06:13	1
13C4 PFHpA	91		10 - 178	03/01/22 08:47	03/04/22 06:13	1
13C8 PFOA	99		26 - 159	03/01/22 08:47	03/04/22 06:13	1
13C9 PFNA	95		26 - 165	03/01/22 08:47	03/04/22 06:13	1
13C6 PFDA	97		26 - 161	03/01/22 08:47	03/04/22 06:13	1
13C7 PFUnA	95		12 - 173	03/01/22 08:47	03/04/22 06:13	1
13C2-PFDoDA	97		11 - 166	03/01/22 08:47	03/04/22 06:13	1
13C2 PFTeDA	98		10 - 169	03/01/22 08:47	03/04/22 06:13	1
13C3 PFBS	107		27 - 179	03/01/22 08:47	03/04/22 06:13	1
13C3 PFHxS	101		24 - 171	03/01/22 08:47	03/04/22 06:13	1
13C8 PFOS	100		41 - 154	03/01/22 08:47	03/04/22 06:13	1
d3-NMeFOSAA	68		10 - 178	03/01/22 08:47	03/04/22 06:13	1
d5-NEtFOSAA	81		10 - 193	03/01/22 08:47	03/04/22 06:13	1
13C8 FOSA	82		14 - 163	03/01/22 08:47	03/04/22 06:13	1
13C4 PFBA	90		28 - 153	03/01/22 08:47	03/04/22 06:13	1
13C5 PFPeA	91		24 - 161	03/01/22 08:47	03/04/22 06:13	1
13C3 HFPO-DA	77		10 - 169	03/01/22 08:47	03/04/22 06:13	1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.5	0.74	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.5	0.74	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.7	0.74	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
DONA	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
HFPODA	ND	H H3 *+ cn	3.7	0.50	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NETFOSAA	ND	H H3 cn	2.5	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
NMeFOSAA	ND	H H3 cn	2.5	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.5	0.50	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorobutanoic acid	ND	H H3 cn	2.5	0.99	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorodecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorododecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluoroheptanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
<b>Perfluorohexanoic acid</b>	<b>0.31</b>	<b>J I H H3 B cn</b>	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluoronanesulfonic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
<b>Perfluorononanoic acid</b>	<b>0.32</b>	<b>J I H H3 cn</b>	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
<b>Perfluorooctanesulfonic acid</b>	<b>0.29</b>	<b>J H H3 cn</b>	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorooctanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
<b>Perfluoropentanoic acid</b>	<b>0.25</b>	<b>J H H3 cn</b>	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluorotridecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1
Perfluoroundecanoic acid	ND	H H3 cn	0.74	0.25	ng/g	☼	03/07/22 09:32	03/10/22 11:28	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	118	cn	10 - 200	03/07/22 09:32	03/10/22 11:28	1
M2-8:2 FTS	155	cn	15 - 200	03/07/22 09:32	03/10/22 11:28	1
13C2 PFTeDA	110	cn	10 - 169	03/07/22 09:32	03/10/22 11:28	1
13C3 HFPO-DA	71	cn	10 - 169	03/07/22 09:32	03/10/22 11:28	1
13C3 PFBS	109	cn	27 - 179	03/07/22 09:32	03/10/22 11:28	1
13C4 PFBA	108	cn	28 - 153	03/07/22 09:32	03/10/22 11:28	1
13C4 PFHpA	108	cn	10 - 178	03/07/22 09:32	03/10/22 11:28	1
13C5 PFPeA	112	cn	24 - 161	03/07/22 09:32	03/10/22 11:28	1
13C8 PFOA	97	cn	26 - 159	03/07/22 09:32	03/10/22 11:28	1
13C8 PFOS	110	cn	41 - 154	03/07/22 09:32	03/10/22 11:28	1
d5-NEtFOSAA	129	cn	10 - 193	03/07/22 09:32	03/10/22 11:28	1
13C3 PFHxS	108	cn	24 - 171	03/07/22 09:32	03/10/22 11:28	1
13C5 PFHxA	93	cn	10 - 174	03/07/22 09:32	03/10/22 11:28	1
13C6 PFDA	114	cn	26 - 161	03/07/22 09:32	03/10/22 11:28	1
13C7 PFUnA	118	cn	12 - 173	03/07/22 09:32	03/10/22 11:28	1
13C8 FOSA	121	cn	14 - 163	03/07/22 09:32	03/10/22 11:28	1
13C2-PFDoDA	106	cn	11 - 166	03/07/22 09:32	03/10/22 11:28	1
13C9 PFNA	137	cn	26 - 165	03/07/22 09:32	03/10/22 11:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90	cn	10 - 137	03/07/22 09:32	03/10/22 11:28	1
13C2 PFUnA	82	cn	10 - 143	03/07/22 09:32	03/10/22 11:28	1
13C4 PFOA	102	cn	10 - 146	03/07/22 09:32	03/10/22 11:28	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.25				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.31				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.32				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>0.88</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	ND		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>0.88</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23.2		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.2		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.8		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.4

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.6	0.79	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.6	0.79	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.9	0.79	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
DONA	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
HFPODA	ND	H H3 *+ cn	3.9	0.52	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
NEtFOSAA	ND	H H3 cn	2.6	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
NMeFOSAA	ND	H H3 cn	2.6	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.6	0.52	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorobutanoic acid</b>	<b>1.4</b>	<b>J H H3 cn</b>	2.6	1.0	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorodecanoic acid</b>	<b>3.0</b>	<b>H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorododecanoic acid</b>	<b>0.74</b>	<b>J I H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluoroheptanoic acid</b>	<b>2.2</b>	<b>H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorohexanoic acid</b>	<b>2.4</b>	<b>H H3 B cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorononanesulfonic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorononanoic acid</b>	<b>2.3</b>	<b>I H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorooctanesulfonic acid</b>	<b>2.1</b>	<b>H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluorooctanoic acid</b>	<b>6.1</b>	<b>H H3 cn</b>	0.79	0.26	ng/g	✱	03/07/22 09:32	03/10/22 11:39	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.4

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid	ND	H H3 cn	0.79	0.26	ng/g	☼	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluoropentanoic acid</b>	<b>0.99</b>	<b>H H3 cn</b>	0.79	0.26	ng/g	☼	03/07/22 09:32	03/10/22 11:39	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.79	0.26	ng/g	☼	03/07/22 09:32	03/10/22 11:39	1
Perfluorotridecanoic acid	ND	H H3 cn	0.79	0.26	ng/g	☼	03/07/22 09:32	03/10/22 11:39	1
<b>Perfluoroundecanoic acid</b>	<b>1.0</b>	<b>I H H3 cn</b>	0.79	0.26	ng/g	☼	03/07/22 09:32	03/10/22 11:39	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
M2-6:2 FTS	115	cn	10 - 200				03/07/22 09:32	03/10/22 11:39	1
M2-8:2 FTS	115	cn	15 - 200				03/07/22 09:32	03/10/22 11:39	1
13C2 PFTeDA	99	cn	10 - 169				03/07/22 09:32	03/10/22 11:39	1
13C3 HFPO-DA	83	cn	10 - 169				03/07/22 09:32	03/10/22 11:39	1
13C3 PFBS	96	cn	27 - 179				03/07/22 09:32	03/10/22 11:39	1
13C4 PFBA	98	cn	28 - 153				03/07/22 09:32	03/10/22 11:39	1
13C4 PFHpA	110	cn	10 - 178				03/07/22 09:32	03/10/22 11:39	1
13C5 PFPeA	98	cn	24 - 161				03/07/22 09:32	03/10/22 11:39	1
13C8 PFOA	97	cn	26 - 159				03/07/22 09:32	03/10/22 11:39	1
13C8 PFOS	96	cn	41 - 154				03/07/22 09:32	03/10/22 11:39	1
d5-NEtFOSAA	109	cn	10 - 193				03/07/22 09:32	03/10/22 11:39	1
13C3 PFHxS	106	cn	24 - 171				03/07/22 09:32	03/10/22 11:39	1
13C5 PFHxA	91	cn	10 - 174				03/07/22 09:32	03/10/22 11:39	1
13C6 PFDA	101	cn	26 - 161				03/07/22 09:32	03/10/22 11:39	1
13C7 PFUnA	99	cn	12 - 173				03/07/22 09:32	03/10/22 11:39	1
13C8 FOSA	97	cn	14 - 163				03/07/22 09:32	03/10/22 11:39	1
13C2-PFDoDA	100	cn	11 - 166				03/07/22 09:32	03/10/22 11:39	1
13C9 PFNA	118	cn	26 - 165				03/07/22 09:32	03/10/22 11:39	1
<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA	84	cn	10 - 137				03/07/22 09:32	03/10/22 11:39	1
13C2 PFUnA	82	cn	10 - 143				03/07/22 09:32	03/10/22 11:39	1
13C4 PFOA	100	cn	10 - 146				03/07/22 09:32	03/10/22 11:39	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	1.4				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.12				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.95				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.55				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	1.4				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.67				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>5.1</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>10</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>15</b>		0.30	0.10	ng/g			03/11/22 10:51	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.4

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23.6		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.6		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.2		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	1.5	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluoroheptanoic acid	1.6	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorooctanoic acid	4.7	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorononanoic acid	1.6	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorodecanoic acid	2.0	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorotridecanoic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorotetradecanoic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorobutanesulfonic acid	ND	H H3	2.4	0.48	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorohexanesulfonic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorooctanesulfonic acid	0.94	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
NEtFOSAA	ND	H H3	2.4	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
NMeFOSAA	ND	H H3	2.4	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluoropentanesulfonic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluoroheptanesulfonic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorononanesulfonic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorodecanesulfonic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorooctanesulfonamide	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorohexadecanoic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorooctadecanoic acid	ND	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorobutanoic acid	ND	H H3	2.4	0.96	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluoropentanoic acid	0.87	H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
HFPODA	ND	H H3	2.4	0.48	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
DONA	ND	H H3	3.6	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluoroundecanoic acid	0.64	J H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.4	0.72	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Perfluorododecanoic acid	0.60	J H H3	0.72	0.24	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	3.6	0.72	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.4	0.72	ng/g	☼	03/01/22 08:47	03/04/22 06:24	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	99		10 - 200				03/01/22 08:47	03/04/22 06:24	1
M2-8:2 FTS	133		15 - 200				03/01/22 08:47	03/04/22 06:24	1
M2-6:2 FTS	111		10 - 200				03/01/22 08:47	03/04/22 06:24	1
13C5 PFHxA	86		10 - 174				03/01/22 08:47	03/04/22 06:24	1
13C4 PFHpA	93		10 - 178				03/01/22 08:47	03/04/22 06:24	1
13C8 PFOA	96		26 - 159				03/01/22 08:47	03/04/22 06:24	1
13C9 PFNA	105		26 - 165				03/01/22 08:47	03/04/22 06:24	1
13C6 PFDA	101		26 - 161				03/01/22 08:47	03/04/22 06:24	1
13C7 PFUnA	98		12 - 173				03/01/22 08:47	03/04/22 06:24	1
13C2-PFDoDA	92		11 - 166				03/01/22 08:47	03/04/22 06:24	1
13C2 PFTeDA	87		10 - 169				03/01/22 08:47	03/04/22 06:24	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFBS	139		27 - 179	03/01/22 08:47	03/04/22 06:24	1
13C3 PFHxS	100		24 - 171	03/01/22 08:47	03/04/22 06:24	1
13C8 PFOS	104		41 - 154	03/01/22 08:47	03/04/22 06:24	1
d3-NMeFOSAA	61		10 - 178	03/01/22 08:47	03/04/22 06:24	1
d5-NEtFOSAA	75		10 - 193	03/01/22 08:47	03/04/22 06:24	1
13C8 FOSA	96		14 - 163	03/01/22 08:47	03/04/22 06:24	1
13C4 PFBA	103		28 - 153	03/01/22 08:47	03/04/22 06:24	1
13C5 PFPeA	122		24 - 161	03/01/22 08:47	03/04/22 06:24	1
13C3 HFPO-DA	77		10 - 169	03/01/22 08:47	03/04/22 06:24	1

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 70.6

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluoroheptanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
<b>Perfluorooctanoic acid</b>	<b>0.59</b>	<b>J H H3</b>	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
<b>Perfluorononanoic acid</b>	<b>0.60</b>	<b>J H H3</b>	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorodecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorotridecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorotetradecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorobutanesulfonic acid	ND	H H3	2.8	0.56	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorohexanesulfonic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
<b>Perfluorooctanesulfonic acid</b>	<b>0.44</b>	<b>J H H3</b>	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
NEtFOSAA	ND	H H3	2.8	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
NMeFOSAA	ND	H H3	2.8	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluoropentanesulfonic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluoroheptanesulfonic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorononanesulfonic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorodecanesulfonic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorooctanesulfonamide	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorohexadecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorooctadecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorobutanoic acid	ND	H H3	2.8	1.1	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluoropentanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
HFPODA	ND	H H3	2.8	0.56	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
DONA	ND	H H3	4.2	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluoroundecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.8	0.84	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
Perfluorododecanoic acid	ND	H H3	0.84	0.28	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	4.2	0.84	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.8	0.84	ng/g	☼	03/01/22 08:47	03/04/22 06:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	86		10 - 200	03/01/22 08:47	03/04/22 06:36	1
M2-8:2 FTS	105		15 - 200	03/01/22 08:47	03/04/22 06:36	1
M2-6:2 FTS	92		10 - 200	03/01/22 08:47	03/04/22 06:36	1
13C5 PFHxA	75		10 - 174	03/01/22 08:47	03/04/22 06:36	1
13C4 PFHpA	78		10 - 178	03/01/22 08:47	03/04/22 06:36	1

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# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 70.6

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	82		26 - 159	03/01/22 08:47	03/04/22 06:36	1
13C9 PFNA	94		26 - 165	03/01/22 08:47	03/04/22 06:36	1
13C6 PFDA	89		26 - 161	03/01/22 08:47	03/04/22 06:36	1
13C7 PFUnA	99		12 - 173	03/01/22 08:47	03/04/22 06:36	1
13C2-PFDoDA	95		11 - 166	03/01/22 08:47	03/04/22 06:36	1
13C2 PFTeDA	91		10 - 169	03/01/22 08:47	03/04/22 06:36	1
13C3 PFBS	105		27 - 179	03/01/22 08:47	03/04/22 06:36	1
13C3 PFHxS	97		24 - 171	03/01/22 08:47	03/04/22 06:36	1
13C8 PFOS	104		41 - 154	03/01/22 08:47	03/04/22 06:36	1
d3-NMeFOSAA	43		10 - 178	03/01/22 08:47	03/04/22 06:36	1
d5-NEtFOSAA	71		10 - 193	03/01/22 08:47	03/04/22 06:36	1
13C8 FOSA	94		14 - 163	03/01/22 08:47	03/04/22 06:36	1
13C4 PFBA	74		28 - 153	03/01/22 08:47	03/04/22 06:36	1
13C5 PFPeA	80		24 - 161	03/01/22 08:47	03/04/22 06:36	1
13C3 HFPO-DA	71		10 - 169	03/01/22 08:47	03/04/22 06:36	1

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 71.1

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.8	0.84	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>6:2 Fluorotelomer sulfonic acid</b>	<b>2.9</b>	<b>I H H3 cn</b>	2.8	0.84	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>8:2 Fluorotelomer sulfonic acid</b>	<b>2.2</b>	<b>J H H3 cn</b>	4.2	0.84	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
DONA	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
HFPODA	ND	H H3 *+ cn	4.2	0.56	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
NEtFOSAA	ND	H H3 cn	2.8	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
NMeFOSAA	ND	H H3 cn	2.8	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.8	0.56	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorobutanoic acid	ND	H H3 cn	2.8	1.1	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorodecanoic acid</b>	<b>0.87</b>	<b>H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorododecanoic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluoroheptanoic acid</b>	<b>5.9</b>	<b>I H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorohexanesulfonic acid</b>	<b>0.44</b>	<b>J H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorohexanoic acid</b>	<b>2.8</b>	<b>H H3 B cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorononanesulfonic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorononanoic acid</b>	<b>92</b>	<b>I H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorooctanesulfonic acid</b>	<b>1.9</b>	<b>H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluorooctanoic acid</b>	<b>4.3</b>	<b>I H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluoropentanoic acid</b>	<b>2.1</b>	<b>H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
Perfluorotridecanoic acid	ND	H H3 cn	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1
<b>Perfluoroundecanoic acid</b>	<b>3.3</b>	<b>I H H3 cn</b>	0.84	0.28	ng/g	✱	03/07/22 09:32	03/10/22 11:50	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 71.1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	120	cn	10 - 200	03/07/22 09:32	03/10/22 11:50	1
M2-8:2 FTS	108	cn	15 - 200	03/07/22 09:32	03/10/22 11:50	1
13C2 PFTeDA	92	cn	10 - 169	03/07/22 09:32	03/10/22 11:50	1
13C3 HFPO-DA	80	cn	10 - 169	03/07/22 09:32	03/10/22 11:50	1
13C3 PFBS	92	cn	27 - 179	03/07/22 09:32	03/10/22 11:50	1
13C4 PFBA	93	cn	28 - 153	03/07/22 09:32	03/10/22 11:50	1
13C4 PFHpA	105	cn	10 - 178	03/07/22 09:32	03/10/22 11:50	1
13C5 PFPeA	95	cn	24 - 161	03/07/22 09:32	03/10/22 11:50	1
13C8 PFOA	98	cn	26 - 159	03/07/22 09:32	03/10/22 11:50	1
13C8 PFOS	101	cn	41 - 154	03/07/22 09:32	03/10/22 11:50	1
d5-NEtFOSAA	95	cn	10 - 193	03/07/22 09:32	03/10/22 11:50	1
13C3 PFHxS	103	cn	24 - 171	03/07/22 09:32	03/10/22 11:50	1
13C5 PFHxA	89	cn	10 - 174	03/07/22 09:32	03/10/22 11:50	1
13C6 PFDA	99	cn	26 - 161	03/07/22 09:32	03/10/22 11:50	1
13C7 PFUnA	96	cn	12 - 173	03/07/22 09:32	03/10/22 11:50	1
13C8 FOSA	92	cn	14 - 163	03/07/22 09:32	03/10/22 11:50	1
13C2-PFDoDA	99	cn	11 - 166	03/07/22 09:32	03/10/22 11:50	1
13C9 PFNA	110	cn	26 - 165	03/07/22 09:32	03/10/22 11:50	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	67	cn	10 - 137	03/07/22 09:32	03/10/22 11:50	1
13C2 PFUnA	73	cn	10 - 143	03/07/22 09:32	03/10/22 11:50	1
13C4 PFOA	84	cn	10 - 146	03/07/22 09:32	03/10/22 11:50	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	2.1				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	2.8				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	5.9				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	3.7				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	91				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>110</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>1.2</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>110</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	28.9		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	28.9		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	29.4		1.0	1.0	%			03/03/22 09:22	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Date Collected: 11/16/21 10:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 64.8

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.1	0.92	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.1	0.92	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	4.6	0.92	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
DONA	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
HFPODA	ND	H H3 *+ cn	4.6	0.61	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
NEtFOSAA	ND	H H3 cn	3.1	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
NMeFOSAA	ND	H H3 cn	3.1	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorobutanesulfonic acid	ND	H H3 cn	3.1	0.61	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorobutanoic acid	ND	H H3 cn	3.1	1.2	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorodecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorododecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluoroheptanoic acid</b>	<b>0.33</b>	<b>J I H H3 cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluorohexanoic acid</b>	<b>0.85</b>	<b>J H H3 B cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorononanesulfonic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluorononanoic acid</b>	<b>3.7</b>	<b>H H3 cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluorooctanesulfonic acid</b>	<b>5.0</b>	<b>H H3 cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluorooctanoic acid</b>	<b>0.85</b>	<b>J I H H3 cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
<b>Perfluoropentanoic acid</b>	<b>0.49</b>	<b>J H H3 cn</b>	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluorotridecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Perfluoroundecanoic acid	ND	H H3 cn	0.92	0.31	ng/g	✱	03/07/22 09:32	03/10/22 12:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-6:2 FTS	113	cn	10 - 200				03/07/22 09:32	03/10/22 12:02	1
M2-8:2 FTS	118	cn	15 - 200				03/07/22 09:32	03/10/22 12:02	1
13C2 PFTeDA	94	cn	10 - 169				03/07/22 09:32	03/10/22 12:02	1
13C3 HFPO-DA	80	cn	10 - 169				03/07/22 09:32	03/10/22 12:02	1
13C3 PFBS	96	cn	27 - 179				03/07/22 09:32	03/10/22 12:02	1
13C4 PFBA	95	cn	28 - 153				03/07/22 09:32	03/10/22 12:02	1
13C4 PFHpA	103	cn	10 - 178				03/07/22 09:32	03/10/22 12:02	1
13C5 PFPeA	97	cn	24 - 161				03/07/22 09:32	03/10/22 12:02	1
13C8 PFOA	93	cn	26 - 159				03/07/22 09:32	03/10/22 12:02	1
13C8 PFOS	97	cn	41 - 154				03/07/22 09:32	03/10/22 12:02	1
d5-NEtFOSAA	101	cn	10 - 193				03/07/22 09:32	03/10/22 12:02	1
13C3 PFHxS	105	cn	24 - 171				03/07/22 09:32	03/10/22 12:02	1
13C5 PFHxA	96	cn	10 - 174				03/07/22 09:32	03/10/22 12:02	1
13C6 PFDA	103	cn	26 - 161				03/07/22 09:32	03/10/22 12:02	1
13C7 PFUnA	100	cn	12 - 173				03/07/22 09:32	03/10/22 12:02	1
13C8 FOSA	100	cn	14 - 163				03/07/22 09:32	03/10/22 12:02	1
13C2-PFDoDA	104	cn	11 - 166				03/07/22 09:32	03/10/22 12:02	1
13C9 PFNA	113	cn	26 - 165				03/07/22 09:32	03/10/22 12:02	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Date Collected: 11/16/21 10:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 64.8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	71	cn	10 - 137	03/07/22 09:32	03/10/22 12:02	1
13C2 PFUnA	67	cn	10 - 143	03/07/22 09:32	03/10/22 12:02	1
13C4 PFOA	80	cn	10 - 146	03/07/22 09:32	03/10/22 12:02	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.49				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.85				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.33				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.074				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	3.7				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>5.4</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>0.78</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>6.2</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluoroheptanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
<b>Perfluorooctanoic acid</b>	<b>0.78</b>	<b>J H H3</b>	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorononanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorodecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorotridecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorotetradecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorobutanesulfonic acid	ND	H H3	3.1	0.61	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorohexanesulfonic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
<b>Perfluorooctanesulfonic acid</b>	<b>4.0</b>	<b>H H3</b>	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
<b>NEtFOSAA</b>	<b>0.65</b>	<b>J H H3</b>	3.1	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
NMeFOSAA	ND	H H3	3.1	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluoropentanesulfonic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluoroheptanesulfonic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorononanesulfonic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorodecanesulfonic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorooctanesulfonamide	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorohexadecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorooctadecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorobutanoic acid	ND	H H3	3.1	1.2	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluoropentanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
HFPODA	ND	H H3	3.1	0.61	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
DONA	ND	H H3	4.6	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluoroundecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	3.1	0.92	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
Perfluorododecanoic acid	ND	H H3	0.92	0.31	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	4.6	0.92	ng/g	✱	03/01/22 08:47	03/04/22 06:47	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Date Collected: 11/16/21 10:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 64.8

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3	3.1	0.92	ng/g	☼	03/01/22 08:47	03/04/22 06:47	1
<i>Isotope Dilution</i>									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	87		10 - 200				03/01/22 08:47	03/04/22 06:47	1
M2-8:2 FTS	94		15 - 200				03/01/22 08:47	03/04/22 06:47	1
M2-6:2 FTS	96		10 - 200				03/01/22 08:47	03/04/22 06:47	1
13C5 PFHxA	71		10 - 174				03/01/22 08:47	03/04/22 06:47	1
13C4 PFHpA	77		10 - 178				03/01/22 08:47	03/04/22 06:47	1
13C8 PFOA	80		26 - 159				03/01/22 08:47	03/04/22 06:47	1
13C9 PFNA	74		26 - 165				03/01/22 08:47	03/04/22 06:47	1
13C6 PFDA	81		26 - 161				03/01/22 08:47	03/04/22 06:47	1
13C7 PFUnA	78		12 - 173				03/01/22 08:47	03/04/22 06:47	1
13C2-PFDoDA	80		11 - 166				03/01/22 08:47	03/04/22 06:47	1
13C2 PFTeDA	85		10 - 169				03/01/22 08:47	03/04/22 06:47	1
13C3 PFBS	94		27 - 179				03/01/22 08:47	03/04/22 06:47	1
13C3 PFHxS	87		24 - 171				03/01/22 08:47	03/04/22 06:47	1
13C8 PFOS	96		41 - 154				03/01/22 08:47	03/04/22 06:47	1
d3-NMeFOSAA	45		10 - 178				03/01/22 08:47	03/04/22 06:47	1
d5-NEtFOSAA	62		10 - 193				03/01/22 08:47	03/04/22 06:47	1
13C8 FOSA	81		14 - 163				03/01/22 08:47	03/04/22 06:47	1
13C4 PFBA	73		28 - 153				03/01/22 08:47	03/04/22 06:47	1
13C5 PFPeA	78		24 - 161				03/01/22 08:47	03/04/22 06:47	1
13C3 HFPO-DA	71		10 - 169				03/01/22 08:47	03/04/22 06:47	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	35.3		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	35.3		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	35.2		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.1	0.93	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.1	0.93	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	4.7	0.93	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
DONA	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
HFPODA	ND	H H3 *+ cn	4.7	0.62	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
NEtFOSAA	ND	H H3 cn	3.1	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
NMeFOSAA	ND	H H3 cn	3.1	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorobutanesulfonic acid	ND	H H3 cn	3.1	0.62	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorobutanoic acid	ND	H H3 cn	3.1	1.2	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorodecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorododecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluoroheptanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
<b>Perfluorohexanoic acid</b>	<b>0.43</b>	<b>J I H H3 B</b>	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
		<b>cn</b>							
Perfluorononanesulfonic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
<b>Perfluorononanoic acid</b>	<b>0.80</b>	<b>J I H H3 cn</b>	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
<b>Perfluorooctanesulfonic acid</b>	<b>0.49</b>	<b>J H H3 cn</b>	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
<b>Perfluorooctanoic acid</b>	<b>0.40</b>	<b>J H H3 cn</b>	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluoropentanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluorotridecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1
Perfluoroundecanoic acid	ND	H H3 cn	0.93	0.31	ng/g	☼	03/07/22 09:32	03/10/22 12:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	128	cn	10 - 200	03/07/22 09:32	03/10/22 12:13	1
M2-8:2 FTS	130	cn	15 - 200	03/07/22 09:32	03/10/22 12:13	1
13C2 PFTeDA	101	cn	10 - 169	03/07/22 09:32	03/10/22 12:13	1
13C3 HFPO-DA	61	cn	10 - 169	03/07/22 09:32	03/10/22 12:13	1
13C3 PFBS	98	cn	27 - 179	03/07/22 09:32	03/10/22 12:13	1
13C4 PFBA	100	cn	28 - 153	03/07/22 09:32	03/10/22 12:13	1
13C4 PFHpA	105	cn	10 - 178	03/07/22 09:32	03/10/22 12:13	1
13C5 PFPeA	103	cn	24 - 161	03/07/22 09:32	03/10/22 12:13	1
13C8 PFOA	98	cn	26 - 159	03/07/22 09:32	03/10/22 12:13	1
13C8 PFOS	107	cn	41 - 154	03/07/22 09:32	03/10/22 12:13	1
d5-NEtFOSAA	118	cn	10 - 193	03/07/22 09:32	03/10/22 12:13	1
13C3 PFHxS	99	cn	24 - 171	03/07/22 09:32	03/10/22 12:13	1
13C5 PFHxA	85	cn	10 - 174	03/07/22 09:32	03/10/22 12:13	1
13C6 PFDA	103	cn	26 - 161	03/07/22 09:32	03/10/22 12:13	1
13C7 PFUnA	109	cn	12 - 173	03/07/22 09:32	03/10/22 12:13	1
13C8 FOSA	111	cn	14 - 163	03/07/22 09:32	03/10/22 12:13	1
13C2-PFDoDA	97	cn	11 - 166	03/07/22 09:32	03/10/22 12:13	1
13C9 PFNA	123	cn	26 - 165	03/07/22 09:32	03/10/22 12:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	78	cn	10 - 137	03/07/22 09:32	03/10/22 12:13	1
13C2 PFUnA	83	cn	10 - 143	03/07/22 09:32	03/10/22 12:13	1
13C4 PFOA	91	cn	10 - 146	03/07/22 09:32	03/10/22 12:13	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.43				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.40				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.80				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>1.6</b>				ng/g			03/11/22 10:54	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	ND		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	1.6		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	36.8		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	36.8		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	36.6		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.4

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluoroheptanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorooctanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorononanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorodecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorotridecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorotetradecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorobutanesulfonic acid	ND	H H3	3.1	0.61	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorohexanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorooctanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
NEtFOSAA	ND	H H3	3.1	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
NMeFOSAA	ND	H H3	3.1	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluoropentanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluoroheptanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorononanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorodecanesulfonic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorooctanesulfonamide	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorohexadecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorooctadecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorobutanoic acid	ND	H H3	3.1	1.2	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluoropentanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
HFPODA	ND	H H3	3.1	0.61	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
DONA	ND	H H3	4.6	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluoroundecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	3.1	0.92	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
Perfluorododecanoic acid	ND	H H3	0.92	0.31	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	4.6	0.92	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	3.1	0.92	ng/g	*	03/01/22 08:47	03/04/22 06:58	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
M2-4:2 FTS	107		10 - 200				03/01/22 08:47	03/04/22 06:58	1
M2-8:2 FTS	112		15 - 200				03/01/22 08:47	03/04/22 06:58	1
M2-6:2 FTS	113		10 - 200				03/01/22 08:47	03/04/22 06:58	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.4

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFHxA	88		10 - 174	03/01/22 08:47	03/04/22 06:58	1
13C4 PFHpA	99		10 - 178	03/01/22 08:47	03/04/22 06:58	1
13C8 PFOA	101		26 - 159	03/01/22 08:47	03/04/22 06:58	1
13C9 PFNA	96		26 - 165	03/01/22 08:47	03/04/22 06:58	1
13C6 PFDA	99		26 - 161	03/01/22 08:47	03/04/22 06:58	1
13C7 PFUnA	99		12 - 173	03/01/22 08:47	03/04/22 06:58	1
13C2-PFDoDA	95		11 - 166	03/01/22 08:47	03/04/22 06:58	1
13C2 PFTeDA	94		10 - 169	03/01/22 08:47	03/04/22 06:58	1
13C3 PFBS	110		27 - 179	03/01/22 08:47	03/04/22 06:58	1
13C3 PFHxS	112		24 - 171	03/01/22 08:47	03/04/22 06:58	1
13C8 PFOS	105		41 - 154	03/01/22 08:47	03/04/22 06:58	1
d3-NMeFOSAA	75		10 - 178	03/01/22 08:47	03/04/22 06:58	1
d5-NEtFOSAA	89		10 - 193	03/01/22 08:47	03/04/22 06:58	1
13C8 FOSA	95		14 - 163	03/01/22 08:47	03/04/22 06:58	1
13C4 PFBA	91		28 - 153	03/01/22 08:47	03/04/22 06:58	1
13C5 PFPeA	95		24 - 161	03/01/22 08:47	03/04/22 06:58	1
13C3 HFPO-DA	79		10 - 169	03/01/22 08:47	03/04/22 06:58	1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 85.8

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluoroheptanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorooctanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorononanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorodecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorotridecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorotetradecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorobutanesulfonic acid	ND	H H3	2.2	0.44	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorohexanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorooctanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
NEtFOSAA	ND	H H3	2.2	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
NMeFOSAA	ND	H H3	2.2	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluoropentanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluoroheptanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorononanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorodecanesulfonic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorooctanesulfonamide	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorohexadecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorooctadecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorobutanoic acid	ND	H H3	2.2	0.89	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluoropentanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
HFPODA	ND	H H3	2.2	0.44	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
DONA	ND	H H3	3.3	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluoroundecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.2	0.67	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1
Perfluorododecanoic acid	ND	H H3	0.67	0.22	ng/g	✱	03/01/22 08:47	03/04/22 07:20	1

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# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 85.8

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 Fluorotelomer sulfonic acid	ND	H H3	3.3	0.67	ng/g	☼	03/01/22 08:47	03/04/22 07:20	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.2	0.67	ng/g	☼	03/01/22 08:47	03/04/22 07:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	114		10 - 200				03/01/22 08:47	03/04/22 07:20	1
M2-8:2 FTS	113		15 - 200				03/01/22 08:47	03/04/22 07:20	1
M2-6:2 FTS	102		10 - 200				03/01/22 08:47	03/04/22 07:20	1
13C5 PFHxA	97		10 - 174				03/01/22 08:47	03/04/22 07:20	1
13C4 PFHpA	100		10 - 178				03/01/22 08:47	03/04/22 07:20	1
13C8 PFOA	101		26 - 159				03/01/22 08:47	03/04/22 07:20	1
13C9 PFNA	104		26 - 165				03/01/22 08:47	03/04/22 07:20	1
13C6 PFDA	105		26 - 161				03/01/22 08:47	03/04/22 07:20	1
13C7 PFUnA	108		12 - 173				03/01/22 08:47	03/04/22 07:20	1
13C2-PFDoDA	108		11 - 166				03/01/22 08:47	03/04/22 07:20	1
13C2 PFTeDA	110		10 - 169				03/01/22 08:47	03/04/22 07:20	1
13C3 PFBS	110		27 - 179				03/01/22 08:47	03/04/22 07:20	1
13C3 PFHxS	110		24 - 171				03/01/22 08:47	03/04/22 07:20	1
13C8 PFOS	107		41 - 154				03/01/22 08:47	03/04/22 07:20	1
d3-NMeFOSAA	39		10 - 178				03/01/22 08:47	03/04/22 07:20	1
d5-NEtFOSAA	54		10 - 193				03/01/22 08:47	03/04/22 07:20	1
13C8 FOSA	107		14 - 163				03/01/22 08:47	03/04/22 07:20	1
13C4 PFBA	96		28 - 153				03/01/22 08:47	03/04/22 07:20	1
13C5 PFPeA	102		24 - 161				03/01/22 08:47	03/04/22 07:20	1
13C3 HFPO-DA	88		10 - 169				03/01/22 08:47	03/04/22 07:20	1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 87.5

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.3	0.68	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.3	0.68	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.4	0.68	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
DONA	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
HFPODA	ND	H H3 *+ cn	3.4	0.45	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
NEtFOSAA	ND	H H3 cn	2.3	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
NMeFOSAA	ND	H H3 cn	2.3	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.3	0.45	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorobutanoic acid	ND	H H3 cn	2.3	0.91	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorodecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorododecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluoroheptanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
<b>Perfluorohexanoic acid</b>	<b>0.27</b>	<b>J H H3 B cn</b>	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorononanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorononanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 87.5

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctadecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorooctanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
<b>Perfluorooctanoic acid</b>	<b>0.23</b>	<b>J I H H3 cn</b>	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluoropentanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluorotridecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1
Perfluoroundecanoic acid	ND	H H3 cn	0.68	0.23	ng/g	☼	03/07/22 09:32	03/10/22 12:24	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	114	cn	10 - 200	03/07/22 09:32	03/10/22 12:24	1
M2-8:2 FTS	108	cn	15 - 200	03/07/22 09:32	03/10/22 12:24	1
13C2 PFTeDA	89	cn	10 - 169	03/07/22 09:32	03/10/22 12:24	1
13C3 HFPO-DA	73	cn	10 - 169	03/07/22 09:32	03/10/22 12:24	1
13C3 PFBS	95	cn	27 - 179	03/07/22 09:32	03/10/22 12:24	1
13C4 PFBA	96	cn	28 - 153	03/07/22 09:32	03/10/22 12:24	1
13C4 PFHpA	105	cn	10 - 178	03/07/22 09:32	03/10/22 12:24	1
13C5 PFPeA	101	cn	24 - 161	03/07/22 09:32	03/10/22 12:24	1
13C8 PFOA	93	cn	26 - 159	03/07/22 09:32	03/10/22 12:24	1
13C8 PFOS	99	cn	41 - 154	03/07/22 09:32	03/10/22 12:24	1
d5-NEtFOSAA	93	cn	10 - 193	03/07/22 09:32	03/10/22 12:24	1
13C3 PFHxS	105	cn	24 - 171	03/07/22 09:32	03/10/22 12:24	1
13C5 PFHxA	91	cn	10 - 174	03/07/22 09:32	03/10/22 12:24	1
13C6 PFDA	93	cn	26 - 161	03/07/22 09:32	03/10/22 12:24	1
13C7 PFUnA	97	cn	12 - 173	03/07/22 09:32	03/10/22 12:24	1
13C8 FOSA	89	cn	14 - 163	03/07/22 09:32	03/10/22 12:24	1
13C2-PFDoDA	89	cn	11 - 166	03/07/22 09:32	03/10/22 12:24	1
13C9 PFNA	114	cn	26 - 165	03/07/22 09:32	03/10/22 12:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	92	cn	10 - 137	03/07/22 09:32	03/10/22 12:24	1
13C2 PFUnA	83	cn	10 - 143	03/07/22 09:32	03/10/22 12:24	1
13C4 PFOA	99	cn	10 - 146	03/07/22 09:32	03/10/22 12:24	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.27				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.23				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.00				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>0.50</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	ND		0.30	0.10	ng/g			03/11/22 10:51	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 87.5

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	0.50		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	12.5		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	12.5		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	14.2		1.0	1.0	%			03/03/22 09:22	1

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 61.3

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluoroheptanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorooctanoic acid	1.8	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorononanoic acid	1.6	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorodecanoic acid	2.2	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorotridecanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorotetradecanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorobutanesulfonic acid	ND	H H3	3.2	0.63	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorohexanesulfonic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorooctanesulfonic acid	1.8	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
NETFOSAA	ND	H H3	3.2	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
NMeFOSAA	ND	H H3	3.2	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluoropentanesulfonic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluoroheptanesulfonic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorononanesulfonic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorodecanesulfonic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorooctanesulfonamide	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorohexadecanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorooctadecanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorobutanoic acid	ND	H H3	3.2	1.3	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluoropentanoic acid	ND	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
HFPODA	ND	H H3	3.2	0.63	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
DONA	ND	H H3	4.7	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluoroundecanoic acid	1.5	H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	3.2	0.95	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
Perfluorododecanoic acid	0.55	J H H3	0.95	0.32	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	4.7	0.95	ng/g	*	03/01/22 08:47	03/04/22 07:31	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	3.2	0.95	ng/g	*	03/01/22 08:47	03/04/22 07:31	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	111		10 - 200	03/01/22 08:47	03/04/22 07:31	1
M2-8:2 FTS	109		15 - 200	03/01/22 08:47	03/04/22 07:31	1
M2-6:2 FTS	113		10 - 200	03/01/22 08:47	03/04/22 07:31	1
13C5 PFHxA	95		10 - 174	03/01/22 08:47	03/04/22 07:31	1
13C4 PFHpA	98		10 - 178	03/01/22 08:47	03/04/22 07:31	1
13C8 PFOA	99		26 - 159	03/01/22 08:47	03/04/22 07:31	1
13C9 PFNA	100		26 - 165	03/01/22 08:47	03/04/22 07:31	1

Eurofins Lancaster Laboratories Env, LLC

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 61.3

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment (Continued)**

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C6 PFDA	100		26 - 161	03/01/22 08:47	03/04/22 07:31	1
13C7 PFDnA	103		12 - 173	03/01/22 08:47	03/04/22 07:31	1
13C2-PFDoDA	100		11 - 166	03/01/22 08:47	03/04/22 07:31	1
13C2 PFTeDA	104		10 - 169	03/01/22 08:47	03/04/22 07:31	1
13C3 PFBS	108		27 - 179	03/01/22 08:47	03/04/22 07:31	1
13C3 PFHxS	106		24 - 171	03/01/22 08:47	03/04/22 07:31	1
13C8 PFOS	103		41 - 154	03/01/22 08:47	03/04/22 07:31	1
d3-NMeFOSAA	84		10 - 178	03/01/22 08:47	03/04/22 07:31	1
d5-NEtFOSAA	97		10 - 193	03/01/22 08:47	03/04/22 07:31	1
13C8 FOSA	89		14 - 163	03/01/22 08:47	03/04/22 07:31	1
13C4 PFBA	97		28 - 153	03/01/22 08:47	03/04/22 07:31	1
13C5 PFPeA	97		24 - 161	03/01/22 08:47	03/04/22 07:31	1
13C3 HFPO-DA	85		10 - 169	03/01/22 08:47	03/04/22 07:31	1

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.9	0.86	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.9	0.86	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	4.3	0.86	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
DONA	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
HFPODA	ND	H H3 *+ cn	4.3	0.58	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
NEtFOSAA	ND	H H3 cn	2.9	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
NMeFOSAA	ND	H H3 cn	2.9	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.9	0.58	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorobutanoic acid	ND	H H3 cn	2.9	1.2	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorodecanoic acid</b>	<b>4.6</b>	<b>I H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorododecanoic acid</b>	<b>0.92</b>	<b>I H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluoroheptanoic acid</b>	<b>0.34</b>	<b>J H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorohexanoic acid</b>	<b>0.66</b>	<b>J H H3 B cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorononanesulfonic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorononanoic acid</b>	<b>2.5</b>	<b>I H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorooctanesulfonic acid</b>	<b>3.3</b>	<b>H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluorooctanoic acid</b>	<b>2.6</b>	<b>I H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluoropentanoic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
Perfluorotridecanoic acid	ND	H H3 cn	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1
<b>Perfluoroundecanoic acid</b>	<b>2.7</b>	<b>H H3 cn</b>	0.86	0.29	ng/g	✱	03/07/22 09:32	03/10/22 12:35	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	114	cn	10 - 200	03/07/22 09:32	03/10/22 12:35	1
M2-8:2 FTS	115	cn	15 - 200	03/07/22 09:32	03/10/22 12:35	1
13C2 PFTeDA	89	cn	10 - 169	03/07/22 09:32	03/10/22 12:35	1
13C3 HFPO-DA	90	cn	10 - 169	03/07/22 09:32	03/10/22 12:35	1
13C3 PFBS	92	cn	27 - 179	03/07/22 09:32	03/10/22 12:35	1
13C4 PFBA	94	cn	28 - 153	03/07/22 09:32	03/10/22 12:35	1
13C4 PFHpA	100	cn	10 - 178	03/07/22 09:32	03/10/22 12:35	1
13C5 PFPeA	95	cn	24 - 161	03/07/22 09:32	03/10/22 12:35	1
13C8 PFOA	93	cn	26 - 159	03/07/22 09:32	03/10/22 12:35	1
13C8 PFOS	103	cn	41 - 154	03/07/22 09:32	03/10/22 12:35	1
d5-NEtFOSAA	88	cn	10 - 193	03/07/22 09:32	03/10/22 12:35	1
13C3 PFHxS	99	cn	24 - 171	03/07/22 09:32	03/10/22 12:35	1
13C5 PFHxA	90	cn	10 - 174	03/07/22 09:32	03/10/22 12:35	1
13C6 PFDA	87	cn	26 - 161	03/07/22 09:32	03/10/22 12:35	1
13C7 PFUnA	94	cn	12 - 173	03/07/22 09:32	03/10/22 12:35	1
13C8 FOSA	90	cn	14 - 163	03/07/22 09:32	03/10/22 12:35	1
13C2-PFDoDA	87	cn	11 - 166	03/07/22 09:32	03/10/22 12:35	1
13C9 PFNA	111	cn	26 - 165	03/07/22 09:32	03/10/22 12:35	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	90	cn	10 - 137	03/07/22 09:32	03/10/22 12:35	1
13C2 PFUnA	86	cn	10 - 143	03/07/22 09:32	03/10/22 12:35	1
13C4 PFOA	97	cn	10 - 146	03/07/22 09:32	03/10/22 12:35	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.66				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.34				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.76				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.90				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>2.7</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>3.4</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Total PFCA</b>	<b>6.1</b>		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	36.8		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	36.8		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	38.7		1.0	1.0	%			03/03/22 09:22	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.7

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluoroheptanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorooctanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorononanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorodecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorotridecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorotetradecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorobutanesulfonic acid	ND	H H3	2.5	0.51	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorohexanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorooctanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
NEtFOSAA	ND	H H3	2.5	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
NMeFOSAA	ND	H H3	2.5	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluoropentanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluoroheptanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorononanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorodecanesulfonic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorooctanesulfonamide	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorohexadecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorooctadecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorobutanoic acid	ND	H H3	2.5	1.0	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluoropentanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
HFPODA	ND	H H3	2.5	0.51	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
DONA	ND	H H3	3.8	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluoroundecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
6:2 Fluorotelomer sulfonic acid	ND	H H3	2.5	0.76	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
Perfluorododecanoic acid	ND	H H3	0.76	0.25	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
8:2 Fluorotelomer sulfonic acid	ND	H H3	3.8	0.76	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1
4:2 Fluorotelomer sulfonic acid	ND	H H3	2.5	0.76	ng/g	☼	03/01/22 08:47	03/04/22 07:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	94		10 - 200	03/01/22 08:47	03/04/22 07:42	1
M2-8:2 FTS	97		15 - 200	03/01/22 08:47	03/04/22 07:42	1
M2-6:2 FTS	100		10 - 200	03/01/22 08:47	03/04/22 07:42	1
13C5 PFHxA	89		10 - 174	03/01/22 08:47	03/04/22 07:42	1
13C4 PFHpA	90		10 - 178	03/01/22 08:47	03/04/22 07:42	1
13C8 PFOA	95		26 - 159	03/01/22 08:47	03/04/22 07:42	1
13C9 PFNA	100		26 - 165	03/01/22 08:47	03/04/22 07:42	1
13C6 PFDA	107		26 - 161	03/01/22 08:47	03/04/22 07:42	1
13C7 PFUnA	104		12 - 173	03/01/22 08:47	03/04/22 07:42	1
13C2-PFDoDA	108		11 - 166	03/01/22 08:47	03/04/22 07:42	1
13C2 PFTeDA	107		10 - 169	03/01/22 08:47	03/04/22 07:42	1
13C3 PFBS	104		27 - 179	03/01/22 08:47	03/04/22 07:42	1
13C3 PFHxS	97		24 - 171	03/01/22 08:47	03/04/22 07:42	1
13C8 PFOS	105		41 - 154	03/01/22 08:47	03/04/22 07:42	1
d3-NMeFOSAA	48		10 - 178	03/01/22 08:47	03/04/22 07:42	1
d5-NEtFOSAA	66		10 - 193	03/01/22 08:47	03/04/22 07:42	1
13C8 FOSA	97		14 - 163	03/01/22 08:47	03/04/22 07:42	1
13C4 PFBA	94		28 - 153	03/01/22 08:47	03/04/22 07:42	1
13C5 PFPeA	94		24 - 161	03/01/22 08:47	03/04/22 07:42	1
13C3 HFPO-DA	78		10 - 169	03/01/22 08:47	03/04/22 07:42	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.0

**Method: 537 TOP - Fluorinated Alkyl Substances - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.5	0.76	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
6:2 Fluorotelomer sulfonic acid	ND	H H3 cn	2.5	0.76	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
8:2 Fluorotelomer sulfonic acid	ND	H H3 cn	3.8	0.76	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
DONA	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
HFPODA	ND	H H3 *+ cn	3.8	0.51	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
NETFOSAA	ND	H H3 cn	2.5	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
NMeFOSAA	ND	H H3 cn	2.5	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorobutanesulfonic acid	ND	H H3 cn	2.5	0.51	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorobutanoic acid	ND	H H3 cn	2.5	1.0	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorodecanesulfonic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorodecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorododecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoroheptanesulfonic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoroheptanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorohexadecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorohexanesulfonic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
<b>Perfluorohexanoic acid</b>	<b>0.38</b>	<b>J H H3 B cn</b>	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoronanesulfonic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
<b>Perfluoronanoic acid</b>	<b>0.26</b>	<b>J H H3 cn</b>	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorooctadecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorooctanesulfonamide	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
<b>Perfluorooctanesulfonic acid</b>	<b>0.59</b>	<b>J H H3 cn</b>	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
<b>Perfluorooctanoic acid</b>	<b>0.32</b>	<b>J I H H3 cn</b>	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoropentanesulfonic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoropentanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorotetradecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluorotridecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1
Perfluoroundecanoic acid	ND	H H3 cn	0.76	0.25	ng/g	✱	03/07/22 09:32	03/10/22 12:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	103	cn	10 - 200	03/07/22 09:32	03/10/22 12:46	1
M2-8:2 FTS	110	cn	15 - 200	03/07/22 09:32	03/10/22 12:46	1
13C2 PFTeDA	89	cn	10 - 169	03/07/22 09:32	03/10/22 12:46	1
13C3 HFPO-DA	75	cn	10 - 169	03/07/22 09:32	03/10/22 12:46	1
13C3 PFBS	93	cn	27 - 179	03/07/22 09:32	03/10/22 12:46	1
13C4 PFBA	95	cn	28 - 153	03/07/22 09:32	03/10/22 12:46	1
13C4 PFHpA	93	cn	10 - 178	03/07/22 09:32	03/10/22 12:46	1
13C5 PFPeA	95	cn	24 - 161	03/07/22 09:32	03/10/22 12:46	1
13C8 PFOA	89	cn	26 - 159	03/07/22 09:32	03/10/22 12:46	1
13C8 PFOS	93	cn	41 - 154	03/07/22 09:32	03/10/22 12:46	1
d5-NEtFOSAA	98	cn	10 - 193	03/07/22 09:32	03/10/22 12:46	1
13C3 PFHxS	96	cn	24 - 171	03/07/22 09:32	03/10/22 12:46	1
13C5 PFHxA	82	cn	10 - 174	03/07/22 09:32	03/10/22 12:46	1
13C6 PFDA	98	cn	26 - 161	03/07/22 09:32	03/10/22 12:46	1
13C7 PFUnA	89	cn	12 - 173	03/07/22 09:32	03/10/22 12:46	1
13C8 FOSA	87	cn	14 - 163	03/07/22 09:32	03/10/22 12:46	1
13C2-PFDoDA	92	cn	11 - 166	03/07/22 09:32	03/10/22 12:46	1
13C9 PFNA	114	cn	26 - 165	03/07/22 09:32	03/10/22 12:46	1

# Client Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	74	cn	10 - 137	03/07/22 09:32	03/10/22 12:46	1
13C2 PFUnA	73	cn	10 - 143	03/07/22 09:32	03/10/22 12:46	1
13C4 PFOA	89	cn	10 - 146	03/07/22 09:32	03/10/22 12:46	1

**Method: Total PFCA-Dif - Total PFCA (Treatment Difference)**

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluoropentanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorohexanoic acid	0.38				ng/g			03/11/22 10:54	1
Perfluoroheptanoic acid	0.00				ng/g			03/11/22 10:54	1
Perfluorooctanoic acid	0.32				ng/g			03/11/22 10:54	1
Perfluorononanoic acid	0.26				ng/g			03/11/22 10:54	1
<b>Total PFCA</b>	<b>0.96</b>				ng/g			03/11/22 10:54	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	ND		0.30	0.10	ng/g			03/11/22 10:51	1

**Method: Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	0.96		0.30	0.10	ng/g			03/11/22 10:51	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23.0		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.0		1.0	1.0	%			02/18/22 20:26	1
Percent Moisture	23.3		1.0	1.0	%			03/03/22 09:22	1



# Surrogate Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		PFHxA (10-137)	PFUnA (10-143)	PFOA (10-146)
LCS 410-230740/3-B	Lab Control Sample	100	90	101
LCS 410-230740/4-B	Lab Control Sample Dup	102	73	110
MB 410-230740/2-B	Method Blank	99	88	118

**Surrogate Legend**

PFHxA = 13C2 PFHxA  
 PFUnA = 13C2 PFUnA  
 PFOA = 13C4 PFOA

## Method: 537 TOP - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		PFHxA	PFUnA	PFOA
MB 410-230740/1-B	Method Blank			

**Surrogate Legend**

PFHxA = 13C2 PFHxA  
 PFUnA = 13C2 PFUnA  
 PFOA = 13C4 PFOA

## Method: 537 TOP - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Post-Treatment

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		PFHxA (10-137)	PFUnA (10-143)	PFOA (10-146)
410-73303-1	AR-01_20211115	87 cn	83 cn	101 cn
410-73303-2	HA-03_20211118	90 cn	82 cn	102 cn
410-73303-3	KE-01_20211117	84 cn	82 cn	100 cn
410-73303-4	KE-04_20211117	67 cn	73 cn	84 cn
410-73303-5	OX-03_20211116	71 cn	67 cn	80 cn
410-73303-6	PI-01_11102021	78 cn	83 cn	91 cn
410-73303-7	PI-02_20211119	92 cn	83 cn	99 cn
410-73303-8	SA-02_20211118	90 cn	86 cn	97 cn
410-73303-9	SA-03_11092021	74 cn	73 cn	89 cn

**Surrogate Legend**

PFHxA = 13C2 PFHxA  
 PFUnA = 13C2 PFUnA  
 PFOA = 13C4 PFOA

# Isotope Dilution Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (10-200)	M282FTS (15-200)	PFTDA (10-169)	HFPODA (10-169)	C3PFBS (27-179)	PFBA (28-153)	C4PFHA (10-178)	PFPeA (24-161)
LCS 410-230740/3-B	Lab Control Sample	90	107	103	85	96	102	101	103
LCS D 410-230740/4-B	Lab Control Sample Dup	100	108	111	100	95	99	109	102
MB 410-230740/2-B	Method Blank	116	123	98	82	92	97	116	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C8PFOA (26-159)	C8PFOS (41-154)	d5NEFOS (10-193)	C3PFHS (24-171)	13C5PHA (10-174)	C6PFDA (26-161)	13C7PUA (12-173)	PFOSA (14-163)
LCS 410-230740/3-B	Lab Control Sample	90	111	106	99	89	100	107	104
LCS D 410-230740/4-B	Lab Control Sample Dup	97	103	109	104	98	101	101	106
MB 410-230740/2-B	Method Blank	102	102	111	112	94	107	93	91

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	PFDODA (11-166)	C9PFNA (26-165)
LCS 410-230740/3-B	Lab Control Sample	105	125
LCS D 410-230740/4-B	Lab Control Sample Dup	106	115
MB 410-230740/2-B	Method Blank	94	112

### Surrogate Legend

- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- PFTDA = 13C2 PFTeDA
- HFPODA = 13C3 HFPO-DA
- C3PFBS = 13C3 PFBS
- PFBA = 13C4 PFBA
- C4PFHA = 13C4 PFHpA
- PFPeA = 13C5 PFPeA
- C8PFOA = 13C8 PFOA
- C8PFOS = 13C8 PFOS
- d5NEFOS = d5-NEtFOSAA
- C3PFHS = 13C3 PFHxS
- 13C5PHA = 13C5 PFHxA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFOSA = 13C8 FOSA
- PFDODA = 13C2-PFDODA
- C9PFNA = 13C9 PFNA

## Method: 537 TOP - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Post-Treatment

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (10-200)	M282FTS (15-200)	PFTDA (10-169)	HFPODA (10-169)	C3PFBS (27-179)	PFBA (28-153)	C4PFHA (10-178)	PFPeA (24-161)
410-73303-1	AR-01_20211115	117 cn	126 cn	106 cn	82 cn	96 cn	101 cn	109 cn	105 cn
410-73303-2	HA-03_20211118	118 cn	155 cn	110 cn	71 cn	109 cn	108 cn	108 cn	112 cn
410-73303-3	KE-01_20211117	115 cn	115 cn	99 cn	83 cn	96 cn	98 cn	110 cn	98 cn
410-73303-4	KE-04_20211117	120 cn	108 cn	92 cn	80 cn	92 cn	93 cn	105 cn	95 cn
410-73303-5	OX-03_20211116	113 cn	118 cn	94 cn	80 cn	96 cn	95 cn	103 cn	97 cn
410-73303-6	PI-01_11102021	128 cn	130 cn	101 cn	61 cn	98 cn	100 cn	105 cn	103 cn
410-73303-7	PI-02_20211119	114 cn	108 cn	89 cn	73 cn	95 cn	96 cn	105 cn	101 cn
410-73303-8	SA-02_20211118	114 cn	115 cn	89 cn	90 cn	92 cn	94 cn	100 cn	95 cn

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# Isotope Dilution Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances (Continued)

Matrix: Solid

Prep Type: Post-Treatment

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (10-200)	M282FTS (15-200)	PFTDA (10-169)	HFPODA (10-169)	C3PFBS (27-179)	PFBA (28-153)	C4PFHA (10-178)	PFPeA (24-161)
410-73303-9	SA-03_11092021	103 cn	110 cn	89 cn	75 cn	93 cn	95 cn	93 cn	95 cn

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	C8PFOA (26-159)	C8PFOS (41-154)	d5NEFOS (10-193)	C3PFHS (24-171)	13C5PHA (10-174)	C6PFDA (26-161)	13C7PUA (10-178)	PFOSA (14-163)
410-73303-1	AR-01_20211115	99 cn	107 cn	110 cn	101 cn	92 cn	102 cn	109 cn	110 cn
410-73303-2	HA-03_20211118	97 cn	110 cn	129 cn	108 cn	93 cn	114 cn	118 cn	121 cn
410-73303-3	KE-01_20211117	97 cn	96 cn	109 cn	106 cn	91 cn	101 cn	99 cn	97 cn
410-73303-4	KE-04_20211117	98 cn	101 cn	95 cn	103 cn	89 cn	99 cn	96 cn	92 cn
410-73303-5	OX-03_20211116	93 cn	97 cn	101 cn	105 cn	96 cn	103 cn	100 cn	100 cn
410-73303-6	PI-01_11102021	98 cn	107 cn	118 cn	99 cn	85 cn	103 cn	109 cn	111 cn
410-73303-7	PI-02_20211119	93 cn	99 cn	93 cn	105 cn	91 cn	93 cn	97 cn	89 cn
410-73303-8	SA-02_20211118	93 cn	103 cn	88 cn	99 cn	90 cn	87 cn	94 cn	90 cn
410-73303-9	SA-03_11092021	89 cn	93 cn	98 cn	96 cn	82 cn	98 cn	89 cn	87 cn

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	PFDODA (11-166)	C9PFNA (26-165)
410-73303-1	AR-01_20211115	100 cn	119 cn
410-73303-2	HA-03_20211118	106 cn	137 cn
410-73303-3	KE-01_20211117	100 cn	118 cn
410-73303-4	KE-04_20211117	99 cn	110 cn
410-73303-5	OX-03_20211116	104 cn	113 cn
410-73303-6	PI-01_11102021	97 cn	123 cn
410-73303-7	PI-02_20211119	89 cn	114 cn
410-73303-8	SA-02_20211118	87 cn	111 cn
410-73303-9	SA-03_11092021	92 cn	114 cn

**Surrogate Legend**

- M262FTS = M2-6:2 FTS
- M282FTS = M2-8:2 FTS
- PFTDA = 13C2 PFTeDA
- HFPODA = 13C3 HFPO-DA
- C3PFBS = 13C3 PFBS
- PFBA = 13C4 PFBA
- C4PFHA = 13C4 PFHpA
- PFPeA = 13C5 PFPeA
- C8PFOA = 13C8 PFOA
- C8PFOS = 13C8 PFOS
- d5NEFOS = d5-NEtFOSAA
- C3PFHS = 13C3 PFHxS
- 13C5PHA = 13C5 PFHxA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFOSA = 13C8 FOSA
- PFDODA = 13C2-PFDODA
- C9PFNA = 13C9 PFNA

# Isotope Dilution Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10**

**Matrix: Solid**

**Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (10-200)	M282FTS (15-200)	M262FTS (10-200)	13C5PHA (10-174)	C4PFHA (10-178)	C8PFOA (26-159)	C9PFNA (26-165)	C6PFDA (26-161)
LCS 410-228617/2-B	Lab Control Sample	97	105	99	102	105	104	106	115
LCS 410-228617/3-B	Lab Control Sample Dup	101	111	97	101	106	110	114	113
MB 410-228617/1-B	Method Blank	112	104	112	109	112	110	107	111

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	13C7PUA (12-173)	PFD <sub>o</sub> DA (11-166)	PFTDA (10-169)	C3PFBS (27-179)	C3PFHS (24-171)	C8PFOS (41-154)	d3NMFOS (10-178)	d5NEFOS (10-193)
LCS 410-228617/2-B	Lab Control Sample	110	111	109	112	109	107	93	104
LCS 410-228617/3-B	Lab Control Sample Dup	117	114	112	101	108	109	84	97
MB 410-228617/1-B	Method Blank	113	110	102	115	113	110	81	92

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	PFOSA (14-163)	PFBA (28-153)	PFPeA (24-161)	HFPODA (10-169)
LCS 410-228617/2-B	Lab Control Sample	102	108	111	80
LCS 410-228617/3-B	Lab Control Sample Dup	107	108	111	88
MB 410-228617/1-B	Method Blank	103	113	114	88

**Surrogate Legend**

- M242FTS = M2-4:2 FTS
- M282FTS = M2-8:2 FTS
- M262FTS = M2-6:2 FTS
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFD<sub>o</sub>DA = 13C2-PFD<sub>o</sub>DA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- PFOSA = 13C8 FOSA
- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- HFPODA = 13C3 HFPO-DA

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10**

**Matrix: Solid**

**Prep Type: Pre-Treatment**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M242FTS (10-200)	M282FTS (15-200)	M262FTS (10-200)	13C5PHA (10-174)	C4PFHA (10-178)	C8PFOA (26-159)	C9PFNA (26-165)	C6PFDA (26-161)
410-73303-1	AR-01_20211115	100	115	115	92	95	97	105	106
410-73303-2	HA-03_20211118	114	106	111	86	91	99	95	97
410-73303-3	KE-01_20211117	99	133	111	86	93	96	105	101
410-73303-4	KE-04_20211117	86	105	92	75	78	82	94	89
410-73303-5	OX-03_20211116	87	94	96	71	77	80	74	81
410-73303-6	PI-01_11102021	107	112	113	88	99	101	96	99

Eurofins Lancaster Laboratories Env, LLC

# Isotope Dilution Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 (Continued)**

**Matrix: Solid**

**Prep Type: Pre-Treatment**

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M242FTS (10-200)	M282FTS (15-200)	M262FTS (10-200)	13C5PHA (10-174)	C4PFHA (10-178)	C8PFOA (26-159)	C9PFNA (26-165)	C6PFDA (26-161)
410-73303-7	PI-02_20211119	114	113	102	97	100	101	104	105
410-73303-8	SA-02_20211118	111	109	113	95	98	99	100	100
410-73303-9	SA-03_11092021	94	97	100	89	90	95	100	107

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	13C7PUA (12-173)	PFD <sub>o</sub> DA (11-166)	PFTDA (10-169)	C3PFBS (27-179)	C3PFHS (24-171)	C8PFOS (41-154)	d3NMFOS (10-178)	d5NEFOS (10-193)
410-73303-1	AR-01_20211115	108	93	97	120	101	103	65	82
410-73303-2	HA-03_20211118	95	97	98	107	101	100	68	81
410-73303-3	KE-01_20211117	98	92	87	139	100	104	61	75
410-73303-4	KE-04_20211117	99	95	91	105	97	104	43	71
410-73303-5	OX-03_20211116	78	80	85	94	87	96	45	62
410-73303-6	PI-01_11102021	99	95	94	110	112	105	75	89
410-73303-7	PI-02_20211119	108	108	110	110	110	107	39	54
410-73303-8	SA-02_20211118	103	100	104	108	106	103	84	97
410-73303-9	SA-03_11092021	104	108	107	104	97	105	48	66

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOSA (14-163)	PFBA (28-153)	PFPeA (24-161)	HFPODA (10-169)
410-73303-1	AR-01_20211115	93	93	105	80
410-73303-2	HA-03_20211118	82	90	91	77
410-73303-3	KE-01_20211117	96	103	122	77
410-73303-4	KE-04_20211117	94	74	80	71
410-73303-5	OX-03_20211116	81	73	78	71
410-73303-6	PI-01_11102021	95	91	95	79
410-73303-7	PI-02_20211119	107	96	102	88
410-73303-8	SA-02_20211118	89	97	97	85
410-73303-9	SA-03_11092021	97	94	94	78

**Surrogate Legend**

- M242FTS = M2-4:2 FTS
- M282FTS = M2-8:2 FTS
- M262FTS = M2-6:2 FTS
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- C6PFDA = 13C6 PFDA
- 13C7PUA = 13C7 PFUnA
- PFD<sub>o</sub>DA = 13C2-PFD<sub>o</sub>DA
- PFTDA = 13C2 PFTeDA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- d3NMFOS = d3-NMeFOSAA
- d5NEFOS = d5-NEtFOSAA
- PFOSA = 13C8 FOSA
- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- HFPODA = 13C3 HFPO-DA

# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances

**Lab Sample ID: MB 410-230740/1-B**  
**Matrix: Solid**  
**Analysis Batch: 232005**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 230740**

<i>Surrogate</i>	<i>MB</i> <i>%Recovery</i>	<i>MB</i> <i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C2 PFHxA				03/07/22 09:32	03/10/22 10:33	1
13C2 PFUnA				03/07/22 09:32	03/10/22 10:33	1
13C4 PFOA				03/07/22 09:32	03/10/22 10:33	1

**Lab Sample ID: MB 410-230740/2-B**  
**Matrix: Solid**  
**Analysis Batch: 232005**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 230740**

<i>Analyte</i>	<i>MB</i> <i>Result</i>	<i>MB</i> <i>Qualifier</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
4:2 Fluorotelomer sulfonic acid	ND		2.0	0.60	ng/g		03/07/22 09:32	03/10/22 10:44	1
6:2 Fluorotelomer sulfonic acid	ND		2.0	0.60	ng/g		03/07/22 09:32	03/10/22 10:44	1
8:2 Fluorotelomer sulfonic acid	ND		3.0	0.60	ng/g		03/07/22 09:32	03/10/22 10:44	1
DONA	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
HFPODA	ND		3.0	0.40	ng/g		03/07/22 09:32	03/10/22 10:44	1
NETFOSAA	ND		2.0	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
NMeFOSAA	ND		2.0	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorobutanesulfonic acid	ND		2.0	0.40	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorobutanoic acid	ND		2.0	0.80	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorodecanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorodecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorododecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluoroheptanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluoroheptanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorohexadecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorohexanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorohexanoic acid	0.300	J	0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorononanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorononanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorooctadecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorooctanesulfonamide	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorooctanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorooctanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluoropentanesulfonic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluoropentanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorotetradecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluorotridecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1
Perfluoroundecanoic acid	ND		0.60	0.20	ng/g		03/07/22 09:32	03/10/22 10:44	1

<i>Isotope Dilution</i>	<i>MB</i> <i>%Recovery</i>	<i>MB</i> <i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
M2-6:2 FTS	116		10 - 200	03/07/22 09:32	03/10/22 10:44	1
M2-8:2 FTS	123		15 - 200	03/07/22 09:32	03/10/22 10:44	1
13C2 PFTeDA	98		10 - 169	03/07/22 09:32	03/10/22 10:44	1
13C3 HFPO-DA	82		10 - 169	03/07/22 09:32	03/10/22 10:44	1
13C3 PFBS	92		27 - 179	03/07/22 09:32	03/10/22 10:44	1
13C4 PFBA	97		28 - 153	03/07/22 09:32	03/10/22 10:44	1
13C4 PFHpA	116		10 - 178	03/07/22 09:32	03/10/22 10:44	1
13C5 PFPeA	96		24 - 161	03/07/22 09:32	03/10/22 10:44	1
13C8 PFOA	102		26 - 159	03/07/22 09:32	03/10/22 10:44	1

# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances (Continued)

**Lab Sample ID: MB 410-230740/2-B**

**Matrix: Solid**

**Analysis Batch: 232005**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 230740**

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 PFOS	102		41 - 154	03/07/22 09:32	03/10/22 10:44	1
d5-NEtFOSAA	111		10 - 193	03/07/22 09:32	03/10/22 10:44	1
13C3 PFHxS	112		24 - 171	03/07/22 09:32	03/10/22 10:44	1
13C5 PFHxA	94		10 - 174	03/07/22 09:32	03/10/22 10:44	1
13C6 PFDA	107		26 - 161	03/07/22 09:32	03/10/22 10:44	1
13C7 PFUnA	93		12 - 173	03/07/22 09:32	03/10/22 10:44	1
13C8 FOSA	91		14 - 163	03/07/22 09:32	03/10/22 10:44	1
13C2-PFDoDA	94		11 - 166	03/07/22 09:32	03/10/22 10:44	1
13C9 PFNA	112		26 - 165	03/07/22 09:32	03/10/22 10:44	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFHxA	99		10 - 137	03/07/22 09:32	03/10/22 10:44	1
13C2 PFUnA	88		10 - 143	03/07/22 09:32	03/10/22 10:44	1
13C4 PFOA	118		10 - 146	03/07/22 09:32	03/10/22 10:44	1

**Lab Sample ID: LCS 410-230740/3-B**

**Matrix: Solid**

**Analysis Batch: 232005**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 230740**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 Fluorotelomer sulfonic acid	47.4	46.1	E I	ng/g		97	59 - 135
8:2 Fluorotelomer sulfonic acid	47.9	49.3	E	ng/g		103	55 - 133
DONA	47.3	52.3		ng/g		111	57 - 137
HFPODA	50.0	69.3	*+	ng/g		139	49 - 135
NEtFOSAA	50.0	48.2	E	ng/g		96	57 - 127
NMeFOSAA	50.0	47.0	E	ng/g		94	60 - 134
Perfluorobutanesulfonic acid	44.3	48.9		ng/g		110	54 - 130
Perfluorobutanoic acid	50.0	57.8		ng/g		116	60 - 128
Perfluorodecanesulfonic acid	48.2	41.1		ng/g		85	57 - 132
Perfluorodecanoic acid	50.0	64.5	I	ng/g		129	56 - 133
Perfluorododecanoic acid	50.0	56.1	I	ng/g		112	60 - 135
Perfluoroheptanesulfonic acid	47.6	42.3		ng/g		89	59 - 132
Perfluoroheptanoic acid	50.0	48.4		ng/g		97	59 - 137
Perfluorohexadecanoic acid	50.0	55.3		ng/g		111	38 - 147
Perfluorohexanesulfonic acid	45.6	40.0		ng/g		88	59 - 129
Perfluorohexanoic acid	50.0	61.6		ng/g		123	59 - 132
Perfluorononanesulfonic acid	48.0	49.8		ng/g		104	60 - 132
Perfluorononanoic acid	50.0	55.4	I	ng/g		111	61 - 134
Perfluorooctadecanoic acid	50.0	51.0		ng/g		102	16 - 160
Perfluorooctanesulfonamide	50.0	48.3		ng/g		97	47 - 149
Perfluorooctanesulfonic acid	46.3	45.2		ng/g		98	61 - 126
Perfluorooctanoic acid	50.0	52.2		ng/g		104	59 - 131
Perfluoropentanesulfonic acid	46.9	52.2		ng/g		111	57 - 133
Perfluoropentanoic acid	50.0	43.5		ng/g		87	58 - 134
Perfluorotetradecanoic acid	50.0	55.1		ng/g		110	62 - 134
Perfluorotridecanoic acid	50.0	54.0		ng/g		108	53 - 143
Perfluoroundecanoic acid	50.0	54.8		ng/g		110	60 - 134

# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-6:2 FTS	90		10 - 200
M2-8:2 FTS	107		15 - 200
13C2 PFTeDA	103		10 - 169
13C3 HFPO-DA	85		10 - 169
13C3 PFBS	96		27 - 179
13C4 PFBA	102		28 - 153
13C4 PFHpA	101		10 - 178
13C5 PFPeA	103		24 - 161
13C8 PFOA	90		26 - 159
13C8 PFOS	111		41 - 154
d5-NEtFOSAA	106		10 - 193
13C3 PFHxS	99		24 - 171
13C5 PFHxA	89		10 - 174
13C6 PFDA	100		26 - 161
13C7 PFUnA	107		12 - 173
13C8 FOSA	104		14 - 163
13C2-PFDoDA	105		11 - 166
13C9 PFNA	125		26 - 165

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFHxA	100		10 - 137
13C2 PFUnA	90		10 - 143
13C4 PFOA	101		10 - 146

Lab Sample ID: LCSD 410-230740/4-B

Matrix: Solid

Analysis Batch: 232005

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 230740

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD
									Limit
4:2 Fluorotelomer sulfonic acid	46.7	37.4		ng/g		80	58 - 131	1	30
6:2 Fluorotelomer sulfonic acid	47.4	42.0	E I	ng/g		89	59 - 135	9	30
8:2 Fluorotelomer sulfonic acid	47.9	47.5	E	ng/g		99	55 - 133	4	30
DONA	47.3	52.2		ng/g		110	57 - 137	0	30
HFPODA	50.0	61.0		ng/g		122	49 - 135	13	30
NEtFOSAA	50.0	46.8	E	ng/g		94	57 - 127	3	30
NMeFOSAA	50.0	49.1	E	ng/g		98	60 - 134	4	30
Perfluorobutanesulfonic acid	44.3	48.2		ng/g		109	54 - 130	1	30
Perfluorobutanoic acid	50.0	58.3		ng/g		117	60 - 128	1	30
Perfluorodecanesulfonic acid	48.2	40.4		ng/g		84	57 - 132	2	30
Perfluorodecanoic acid	50.0	64.4	I	ng/g		129	56 - 133	0	30
Perfluorododecanoic acid	50.0	53.4	I	ng/g		107	60 - 135	5	30
Perfluoroheptanesulfonic acid	47.6	42.5		ng/g		89	59 - 132	1	30
Perfluoroheptanoic acid	50.0	48.3		ng/g		97	59 - 137	0	30
Perfluorohexadecanoic acid	50.0	53.1		ng/g		106	38 - 147	4	30
Perfluorohexanesulfonic acid	45.6	40.8		ng/g		89	59 - 129	2	30
Perfluorohexanoic acid	50.0	57.6		ng/g		115	59 - 132	7	30
Perfluorononanesulfonic acid	48.0	47.3		ng/g		98	60 - 132	5	30
Perfluorononanoic acid	50.0	52.2	I	ng/g		104	61 - 134	6	30
Perfluorooctadecanoic acid	50.0	49.5		ng/g		99	16 - 160	3	30
Perfluorooctanesulfonamide	50.0	48.9		ng/g		98	47 - 149	1	30
Perfluorooctanesulfonic acid	46.3	44.3		ng/g		96	61 - 126	2	30

Eurofins Lancaster Laboratories Env, LLC



# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: 537 TOP - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 410-230740/4-B

Matrix: Solid

Analysis Batch: 232005

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 230740

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Perfluorooctanoic acid	50.0	52.7		ng/g		105	59 - 131	1	30	
Perfluoropentanesulfonic acid	46.9	51.0		ng/g		109	57 - 133	2	30	
Perfluoropentanoic acid	50.0	43.6		ng/g		87	58 - 134	0	30	
Perfluorotetradecanoic acid	50.0	51.5		ng/g		103	62 - 134	7	30	
Perfluorotridecanoic acid	50.0	55.2		ng/g		110	53 - 143	2	30	
Perfluoroundecanoic acid	50.0	58.7	I	ng/g		117	60 - 134	7	30	

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
M2-6:2 FTS	100		10 - 200
M2-8:2 FTS	108		15 - 200
13C2 PFTeDA	111		10 - 169
13C3 HFPO-DA	100		10 - 169
13C3 PFBS	95		27 - 179
13C4 PFBA	99		28 - 153
13C4 PFHpA	109		10 - 178
13C5 PFPeA	102		24 - 161
13C8 PFOA	97		26 - 159
13C8 PFOS	103		41 - 154
d5-NEtFOSAA	109		10 - 193
13C3 PFHxS	104		24 - 171
13C5 PFHxA	98		10 - 174
13C6 PFDA	101		26 - 161
13C7 PFUnA	101		12 - 173
13C8 FOSA	106		14 - 163
13C2-PFDoDA	106		11 - 166
13C9 PFNA	115		26 - 165

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
13C2 PFHxA	102		10 - 137
13C2 PFUnA	73		10 - 143
13C4 PFOA	110		10 - 146

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10

Lab Sample ID: MB 410-228617/1-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 228617

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorohexanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluoroheptanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorooctanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorononanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorodecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorotridecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorotetradecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorobutanesulfonic acid	ND		2.0	0.40	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorohexanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorooctanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1

Eurofins Lancaster Laboratories Env, LLC

# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 (Continued)

Lab Sample ID: MB 410-228617/1-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 228617

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
NEtFOSAA	ND		2.0	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
NMeFOSAA	ND		2.0	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluoropentanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluoroheptanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorononanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorodecanesulfonic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorooctanesulfonamide	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorohexadecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorooctadecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorobutanoic acid	ND		2.0	0.80	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluoropentanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
HFPODA	ND		2.0	0.40	ng/g		03/01/22 08:47	03/04/22 05:29	1
DONA	ND		3.0	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluoroundecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
6:2 Fluorotelomer sulfonic acid	ND		2.0	0.60	ng/g		03/01/22 08:47	03/04/22 05:29	1
Perfluorododecanoic acid	ND		0.60	0.20	ng/g		03/01/22 08:47	03/04/22 05:29	1
8:2 Fluorotelomer sulfonic acid	ND		3.0	0.60	ng/g		03/01/22 08:47	03/04/22 05:29	1
4:2 Fluorotelomer sulfonic acid	ND		2.0	0.60	ng/g		03/01/22 08:47	03/04/22 05:29	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
M2-4:2 FTS	112		10 - 200	03/01/22 08:47	03/04/22 05:29	1
M2-8:2 FTS	104		15 - 200	03/01/22 08:47	03/04/22 05:29	1
M2-6:2 FTS	112		10 - 200	03/01/22 08:47	03/04/22 05:29	1
13C5 PFHxA	109		10 - 174	03/01/22 08:47	03/04/22 05:29	1
13C4 PFHpA	112		10 - 178	03/01/22 08:47	03/04/22 05:29	1
13C8 PFOA	110		26 - 159	03/01/22 08:47	03/04/22 05:29	1
13C9 PFNA	107		26 - 165	03/01/22 08:47	03/04/22 05:29	1
13C6 PFDA	111		26 - 161	03/01/22 08:47	03/04/22 05:29	1
13C7 PFUnA	113		12 - 173	03/01/22 08:47	03/04/22 05:29	1
13C2-PFDoDA	110		11 - 166	03/01/22 08:47	03/04/22 05:29	1
13C2 PFTeDA	102		10 - 169	03/01/22 08:47	03/04/22 05:29	1
13C3 PFBS	115		27 - 179	03/01/22 08:47	03/04/22 05:29	1
13C3 PFHxS	113		24 - 171	03/01/22 08:47	03/04/22 05:29	1
13C8 PFOS	110		41 - 154	03/01/22 08:47	03/04/22 05:29	1
d3-NMeFOSAA	81		10 - 178	03/01/22 08:47	03/04/22 05:29	1
d5-NEtFOSAA	92		10 - 193	03/01/22 08:47	03/04/22 05:29	1
13C8 FOSA	103		14 - 163	03/01/22 08:47	03/04/22 05:29	1
13C4 PFBA	113		28 - 153	03/01/22 08:47	03/04/22 05:29	1
13C5 PFPeA	114		24 - 161	03/01/22 08:47	03/04/22 05:29	1
13C3 HFPO-DA	88		10 - 169	03/01/22 08:47	03/04/22 05:29	1

Lab Sample ID: LCS 410-228617/2-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 228617

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Perfluorohexanoic acid	25.0	21.2		ng/g		85	59 - 132
Perfluoroheptanoic acid	25.0	22.0		ng/g		88	59 - 137
Perfluorooctanoic acid	25.0	21.9		ng/g		88	59 - 131

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# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 (Continued)

Lab Sample ID: LCS 410-228617/2-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 228617

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Perfluorononanoic acid	25.0	21.5		ng/g		86	61 - 134
Perfluorodecanoic acid	25.0	18.9		ng/g		76	56 - 133
Perfluorotridecanoic acid	25.0	23.0		ng/g		92	53 - 143
Perfluorotetradecanoic acid	25.0	22.1		ng/g		88	62 - 134
Perfluorobutanesulfonic acid	22.1	19.1		ng/g		86	54 - 130
Perfluorohexanesulfonic acid	22.8	18.7		ng/g		82	59 - 129
Perfluorooctanesulfonic acid	23.1	19.2		ng/g		83	61 - 126
NEtFOSAA	25.0	21.6		ng/g		86	57 - 127
NMeFOSAA	25.0	22.7		ng/g		91	60 - 134
Perfluoropentanesulfonic acid	23.5	19.4		ng/g		83	57 - 133
Perfluoroheptanesulfonic acid	23.8	18.2		ng/g		76	59 - 132
Perfluorononanesulfonic acid	24.0	21.1		ng/g		88	60 - 132
Perfluorodecanesulfonic acid	24.1	19.5		ng/g		81	57 - 132
Perfluorooctanesulfonamide	25.0	21.5		ng/g		86	47 - 149
Perfluorohexadecanoic acid	25.0	20.7		ng/g		83	38 - 147
Perfluorooctadecanoic acid	25.0	23.0		ng/g		92	16 - 160
Perfluorobutanoic acid	25.0	20.2		ng/g		81	60 - 128
Perfluoropentanoic acid	25.0	19.0		ng/g		76	58 - 134
HFPODA	25.0	23.3		ng/g		93	49 - 135
DONA	23.6	19.4		ng/g		82	57 - 137
Perfluoroundecanoic acid	25.0	20.5		ng/g		82	60 - 134
6:2 Fluorotelomer sulfonic acid	23.7	20.9		ng/g		88	59 - 135
Perfluorododecanoic acid	25.0	22.5		ng/g		90	60 - 135
8:2 Fluorotelomer sulfonic acid	24.0	21.1		ng/g		88	55 - 133
4:2 Fluorotelomer sulfonic acid	23.4	19.4		ng/g		83	58 - 131

Isotope Dilution	LCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	97		10 - 200
M2-8:2 FTS	105		15 - 200
M2-6:2 FTS	99		10 - 200
13C5 PFHxA	102		10 - 174
13C4 PFHpA	105		10 - 178
13C8 PFOA	104		26 - 159
13C9 PFNA	106		26 - 165
13C6 PFDA	115		26 - 161
13C7 PFUnA	110		12 - 173
13C2-PFDoDA	111		11 - 166
13C2 PFTeDA	109		10 - 169
13C3 PFBS	112		27 - 179
13C3 PFHxS	109		24 - 171
13C8 PFOS	107		41 - 154
d3-NMeFOSAA	93		10 - 178
d5-NEtFOSAA	104		10 - 193
13C8 FOSA	102		14 - 163
13C4 PFBA	108		28 - 153
13C5 PFPeA	111		24 - 161
13C3 HFPO-DA	80		10 - 169

# QC Sample Results

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 (Continued)

Lab Sample ID: LCSD 410-228617/3-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 228617

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits		RPD	
							Min	Max	RPD	Limit
Perfluorohexanoic acid	25.0	21.5		ng/g		86	59 - 132	1	30	
Perfluoroheptanoic acid	25.0	21.3		ng/g		85	59 - 137	3	30	
Perfluorooctanoic acid	25.0	19.6		ng/g		78	59 - 131	11	30	
Perfluorononanoic acid	25.0	20.5		ng/g		82	61 - 134	5	30	
Perfluorodecanoic acid	25.0	19.5		ng/g		78	56 - 133	3	30	
Perfluorotridecanoic acid	25.0	23.2		ng/g		93	53 - 143	1	30	
Perfluorotetradecanoic acid	25.0	21.4		ng/g		86	62 - 134	3	30	
Perfluorobutanesulfonic acid	22.1	17.4		ng/g		78	54 - 130	9	30	
Perfluorohexanesulfonic acid	22.8	19.3		ng/g		85	59 - 129	3	30	
Perfluorooctanesulfonic acid	23.1	19.4		ng/g		84	61 - 126	1	30	
NEtFOSAA	25.0	22.4		ng/g		90	57 - 127	4	30	
NMeFOSAA	25.0	24.1		ng/g		96	60 - 134	6	30	
Perfluoropentanesulfonic acid	23.5	22.7		ng/g		97	57 - 133	15	30	
Perfluoroheptanesulfonic acid	23.8	19.0		ng/g		80	59 - 132	4	30	
Perfluorononanesulfonic acid	24.0	20.0		ng/g		83	60 - 132	5	30	
Perfluorodecanesulfonic acid	24.1	19.2		ng/g		80	57 - 132	2	30	
Perfluorooctanesulfonamide	25.0	20.6		ng/g		83	47 - 149	4	30	
Perfluorohexadecanoic acid	25.0	19.9		ng/g		80	38 - 147	4	30	
Perfluorooctadecanoic acid	25.0	22.3		ng/g		89	16 - 160	3	30	
Perfluorobutanoic acid	25.0	20.6		ng/g		82	60 - 128	2	30	
Perfluoropentanoic acid	25.0	19.0		ng/g		76	58 - 134	0	30	
HFPODA	25.0	22.4		ng/g		90	49 - 135	4	30	
DONA	23.6	19.6		ng/g		83	57 - 137	1	30	
Perfluoroundecanoic acid	25.0	19.8		ng/g		79	60 - 134	4	30	
6:2 Fluorotelomer sulfonic acid	23.7	21.2		ng/g		90	59 - 135	1	30	
Perfluorododecanoic acid	25.0	21.7		ng/g		87	60 - 135	4	30	
8:2 Fluorotelomer sulfonic acid	24.0	19.2		ng/g		80	55 - 133	9	30	
4:2 Fluorotelomer sulfonic acid	23.4	19.2		ng/g		82	58 - 131	1	30	

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	101		10 - 200
M2-8:2 FTS	111		15 - 200
M2-6:2 FTS	97		10 - 200
13C5 PFHxA	101		10 - 174
13C4 PFHpA	106		10 - 178
13C8 PFOA	110		26 - 159
13C9 PFNA	114		26 - 165
13C6 PFDA	113		26 - 161
13C7 PFUnA	117		12 - 173
13C2-PFDoDA	114		11 - 166
13C2 PFTeDA	112		10 - 169
13C3 PFBS	101		27 - 179
13C3 PFHxS	108		24 - 171
13C8 PFOS	109		41 - 154
d3-NMeFOSAA	84		10 - 178
d5-NEtFOSAA	97		10 - 193
13C8 FOSA	107		14 - 163
13C4 PFBA	108		28 - 153

Eurofins Lancaster Laboratories Env, LLC

# QC Sample Results

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Method: T-WI12031 r10 - SOP(00037) T-PFAS-WI12031 Rev.10 (Continued)

Lab Sample ID: LCSD 410-228617/3-B

Matrix: Solid

Analysis Batch: 229741

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 228617

<i>Isotope Dilution</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C5 PFPeA	111		24 - 161
13C3 HFPO-DA	88		10 - 169

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# QC Association Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## LCMS

### Prep Batch: 228617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-2	HA-03_20211118	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-3	KE-01_20211117	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-4	KE-04_20211117	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-5	OX-03_20211116	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-6	PI-01_11102021	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-7	PI-02_20211119	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-8	SA-02_20211118	Pre-Treatment	Solid	TOP Pre-Prep	
410-73303-9	SA-03_11092021	Pre-Treatment	Solid	TOP Pre-Prep	
MB 410-228617/1-B	Method Blank	Total/NA	Solid	TOP Pre-Prep	
LCS 410-228617/2-B	Lab Control Sample	Total/NA	Solid	TOP Pre-Prep	
LCSD 410-228617/3-B	Lab Control Sample Dup	Total/NA	Solid	TOP Pre-Prep	

### Cleanup Batch: 228742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-2	HA-03_20211118	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-3	KE-01_20211117	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-4	KE-04_20211117	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-5	OX-03_20211116	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-6	PI-01_11102021	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-7	PI-02_20211119	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-8	SA-02_20211118	Pre-Treatment	Solid	Extract Aliquot	228617
410-73303-9	SA-03_11092021	Pre-Treatment	Solid	Extract Aliquot	228617
MB 410-228617/1-B	Method Blank	Total/NA	Solid	Extract Aliquot	228617
LCS 410-228617/2-B	Lab Control Sample	Total/NA	Solid	Extract Aliquot	228617
LCSD 410-228617/3-B	Lab Control Sample Dup	Total/NA	Solid	Extract Aliquot	228617

### Analysis Batch: 229741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-2	HA-03_20211118	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-3	KE-01_20211117	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-4	KE-04_20211117	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-5	OX-03_20211116	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-6	PI-01_11102021	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-7	PI-02_20211119	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-8	SA-02_20211118	Pre-Treatment	Solid	T-WI12031 r10	228742
410-73303-9	SA-03_11092021	Pre-Treatment	Solid	T-WI12031 r10	228742
MB 410-228617/1-B	Method Blank	Total/NA	Solid	T-WI12031 r10	228742
LCS 410-228617/2-B	Lab Control Sample	Total/NA	Solid	T-WI12031 r10	228742
LCSD 410-228617/3-B	Lab Control Sample Dup	Total/NA	Solid	T-WI12031 r10	228742

### Prep Batch: 230740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Post-Treatment	Solid	TOP Post-Prep	
410-73303-2	HA-03_20211118	Post-Treatment	Solid	TOP Post-Prep	
410-73303-3	KE-01_20211117	Post-Treatment	Solid	TOP Post-Prep	
410-73303-4	KE-04_20211117	Post-Treatment	Solid	TOP Post-Prep	
410-73303-5	OX-03_20211116	Post-Treatment	Solid	TOP Post-Prep	
410-73303-6	PI-01_11102021	Post-Treatment	Solid	TOP Post-Prep	

# QC Association Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## LCMS (Continued)

### Prep Batch: 230740 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-7	PI-02_20211119	Post-Treatment	Solid	TOP Post-Prep	
410-73303-8	SA-02_20211118	Post-Treatment	Solid	TOP Post-Prep	
410-73303-9	SA-03_11092021	Post-Treatment	Solid	TOP Post-Prep	
MB 410-230740/1-B	Method Blank	Total/NA	Solid	TOP Post-Prep	
MB 410-230740/2-B	Method Blank	Total/NA	Solid	TOP Post-Prep	
LCS 410-230740/3-B	Lab Control Sample	Total/NA	Solid	TOP Post-Prep	
LCSD 410-230740/4-B	Lab Control Sample Dup	Total/NA	Solid	TOP Post-Prep	

### Cleanup Batch: 231760

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-2	HA-03_20211118	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-3	KE-01_20211117	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-4	KE-04_20211117	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-5	OX-03_20211116	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-6	PI-01_11102021	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-7	PI-02_20211119	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-8	SA-02_20211118	Post-Treatment	Solid	Extract Aliquot	230740
410-73303-9	SA-03_11092021	Post-Treatment	Solid	Extract Aliquot	230740
MB 410-230740/1-B	Method Blank	Total/NA	Solid	Extract Aliquot	230740
MB 410-230740/2-B	Method Blank	Total/NA	Solid	Extract Aliquot	230740
LCS 410-230740/3-B	Lab Control Sample	Total/NA	Solid	Extract Aliquot	230740
LCSD 410-230740/4-B	Lab Control Sample Dup	Total/NA	Solid	Extract Aliquot	230740

### Analysis Batch: 232005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Post-Treatment	Solid	537 TOP	231760
410-73303-2	HA-03_20211118	Post-Treatment	Solid	537 TOP	231760
410-73303-3	KE-01_20211117	Post-Treatment	Solid	537 TOP	231760
410-73303-4	KE-04_20211117	Post-Treatment	Solid	537 TOP	231760
410-73303-5	OX-03_20211116	Post-Treatment	Solid	537 TOP	231760
410-73303-6	PI-01_11102021	Post-Treatment	Solid	537 TOP	231760
410-73303-7	PI-02_20211119	Post-Treatment	Solid	537 TOP	231760
410-73303-8	SA-02_20211118	Post-Treatment	Solid	537 TOP	231760
410-73303-9	SA-03_11092021	Post-Treatment	Solid	537 TOP	231760
MB 410-230740/1-B	Method Blank	Total/NA	Solid	537 TOP	231760
MB 410-230740/2-B	Method Blank	Total/NA	Solid	537 TOP	231760
LCS 410-230740/3-B	Lab Control Sample	Total/NA	Solid	537 TOP	231760
LCSD 410-230740/4-B	Lab Control Sample Dup	Total/NA	Solid	537 TOP	231760

### Analysis Batch: 232657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-1	AR-01_20211115	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-2	HA-03_20211118	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-2	HA-03_20211118	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-3	KE-01_20211117	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-3	KE-01_20211117	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-4	KE-04_20211117	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-4	KE-04_20211117	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-5	OX-03_20211116	Post-Treatment	Solid	Total PFCA-Sum	

# QC Association Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## LCMS (Continued)

### Analysis Batch: 232657 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-5	OX-03_20211116	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-6	PI-01_11102021	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-6	PI-01_11102021	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-7	PI-02_20211119	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-7	PI-02_20211119	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-8	SA-02_20211118	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-8	SA-02_20211118	Pre-Treatment	Solid	Total PFCA-Sum	
410-73303-9	SA-03_11092021	Post-Treatment	Solid	Total PFCA-Sum	
410-73303-9	SA-03_11092021	Pre-Treatment	Solid	Total PFCA-Sum	

### Analysis Batch: 232660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Total/NA	Solid	Total PFCA-Dif	
410-73303-2	HA-03_20211118	Total/NA	Solid	Total PFCA-Dif	
410-73303-3	KE-01_20211117	Total/NA	Solid	Total PFCA-Dif	
410-73303-4	KE-04_20211117	Total/NA	Solid	Total PFCA-Dif	
410-73303-5	OX-03_20211116	Total/NA	Solid	Total PFCA-Dif	
410-73303-6	PI-01_11102021	Total/NA	Solid	Total PFCA-Dif	
410-73303-7	PI-02_20211119	Total/NA	Solid	Total PFCA-Dif	
410-73303-8	SA-02_20211118	Total/NA	Solid	Total PFCA-Dif	
410-73303-9	SA-03_11092021	Total/NA	Solid	Total PFCA-Dif	

## General Chemistry

### Analysis Batch: 225560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Total/NA	Solid	Moisture	
410-73303-2	HA-03_20211118	Total/NA	Solid	Moisture	
410-73303-3	KE-01_20211117	Total/NA	Solid	Moisture	
410-73303-4	KE-04_20211117	Total/NA	Solid	Moisture	
410-73303-5	OX-03_20211116	Total/NA	Solid	Moisture	
410-73303-6	PI-01_11102021	Total/NA	Solid	Moisture	
410-73303-7	PI-02_20211119	Total/NA	Solid	Moisture	
410-73303-8	SA-02_20211118	Total/NA	Solid	Moisture	
410-73303-9	SA-03_11092021	Total/NA	Solid	Moisture	

### Analysis Batch: 229591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-73303-1	AR-01_20211115	Total/NA	Solid	Moisture	
410-73303-2	HA-03_20211118	Total/NA	Solid	Moisture	
410-73303-3	KE-01_20211117	Total/NA	Solid	Moisture	
410-73303-4	KE-04_20211117	Total/NA	Solid	Moisture	
410-73303-5	OX-03_20211116	Total/NA	Solid	Moisture	
410-73303-6	PI-01_11102021	Total/NA	Solid	Moisture	
410-73303-7	PI-02_20211119	Total/NA	Solid	Moisture	
410-73303-8	SA-02_20211118	Total/NA	Solid	Moisture	
410-73303-9	SA-03_11092021	Total/NA	Solid	Moisture	



## Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 11:17	MT26	ELLE

**Client Sample ID: AR-01\_20211115**

**Lab Sample ID: 410-73303-1**

Date Collected: 11/15/21 13:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 82.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:02	QD9Y	ELLE

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:13	QD9Y	ELLE

# Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: HA-03\_20211118**

**Lab Sample ID: 410-73303-2**

Date Collected: 11/18/21 17:00

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 11:28	MT26	ELLE

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 11:39	MT26	ELLE

**Client Sample ID: KE-01\_20211117**

**Lab Sample ID: 410-73303-3**

Date Collected: 11/17/21 11:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:24	QD9Y	ELLE

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

# Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 70.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:36	QD9Y	ELLE

**Client Sample ID: KE-04\_20211117**

**Lab Sample ID: 410-73303-4**

Date Collected: 11/17/21 09:10

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 71.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 11:50	MT26	ELLE

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Date Collected: 11/16/21 10:20

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: OX-03\_20211116**

**Lab Sample ID: 410-73303-5**

Date Collected: 11/16/21 10:20

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 64.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 12:02	MT26	ELLE
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:47	QD9Y	ELLE

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE

# Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 12:13	MT26	ELLE

**Client Sample ID: PI-01\_11102021**

**Lab Sample ID: 410-73303-6**

Date Collected: 11/10/21 12:50

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 06:58	QD9Y	ELLE

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 85.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 07:20	QD9Y	ELLE

## Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: PI-02\_20211119**

**Lab Sample ID: 410-73303-7**

Date Collected: 11/19/21 10:05

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 87.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 12:24	MT26	ELLE

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 61.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 07:31	QD9Y	ELLE

**Client Sample ID: SA-02\_20211118**

**Lab Sample ID: 410-73303-8**

Date Collected: 11/18/21 08:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 63.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 12:35	MT26	ELLE

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Total PFCA-Dif		1	232660	03/11/22 10:54	MT26	ELLE
Post-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Pre-Treatment	Analysis	Total PFCA-Sum		1	232657	03/11/22 10:51	MT26	ELLE
Total/NA	Analysis	Moisture		1	225560	02/18/22 20:26	OEL4	ELLE
Total/NA	Analysis	Moisture		1	229591	03/03/22 09:22	UVJN	ELLE

## Lab Chronicle

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 76.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre-Prep			228617	03/01/22 08:47	PR5J	ELLE
Pre-Treatment	Cleanup	Extract Aliquot			228742	03/01/22 12:36	PR5J	ELLE
Pre-Treatment	Analysis	T-WI12031 r10		1	229741	03/04/22 07:42	QD9Y	ELLE

**Client Sample ID: SA-03\_11092021**

**Lab Sample ID: 410-73303-9**

Date Collected: 11/09/21 09:15

Matrix: Solid

Date Received: 02/17/22 11:37

Percent Solids: 77.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post-Prep			230740	03/07/22 09:32	S7AC	ELLE
Post-Treatment	Cleanup	Extract Aliquot			231760	03/09/22 13:23	S7AC	ELLE
Post-Treatment	Analysis	537 TOP		1	232005	03/10/22 12:46	MT26	ELLE

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Accreditation/Certification Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

## Laboratory: Eurofins Lancaster Laboratories Env, LLC

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

Authority	Program	Identification Number	Expiration Date
Maine	State	2019012	03-12-22

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

Analysis Method	Prep Method	Matrix	Analyte
537 TOP	TOP Post-Prep	Solid	4:2 Fluorotelomer sulfonic acid
537 TOP	TOP Post-Prep	Solid	6:2 Fluorotelomer sulfonic acid
537 TOP	TOP Post-Prep	Solid	8:2 Fluorotelomer sulfonic acid
537 TOP	TOP Post-Prep	Solid	DONA
537 TOP	TOP Post-Prep	Solid	HFPODA
537 TOP	TOP Post-Prep	Solid	NEtFOSAA
537 TOP	TOP Post-Prep	Solid	NMeFOSAA
537 TOP	TOP Post-Prep	Solid	Perfluorobutanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluorobutanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorodecanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluorodecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorododecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluoroheptanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluoroheptanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorohexadecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorohexanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluorohexanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorononanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluorononanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorooctadecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorooctanesulfonamide
537 TOP	TOP Post-Prep	Solid	Perfluorooctanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluorooctanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluoropentanesulfonic acid
537 TOP	TOP Post-Prep	Solid	Perfluoropentanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorotetradecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluorotridecanoic acid
537 TOP	TOP Post-Prep	Solid	Perfluoroundecanoic acid
Moisture		Solid	Percent Moisture
Total PFCA-Dif		Solid	Perfluorobutanoic acid
Total PFCA-Dif		Solid	Perfluoroheptanoic acid
Total PFCA-Dif		Solid	Perfluorohexanoic acid
Total PFCA-Dif		Solid	Perfluorononanoic acid
Total PFCA-Dif		Solid	Perfluorooctanoic acid
Total PFCA-Dif		Solid	Perfluoropentanoic acid
Total PFCA-Dif		Solid	Total PFCA
Total PFCA-Sum		Solid	Total PFCA
T-WI12031 r10	TOP Pre-Prep	Solid	4:2 Fluorotelomer sulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	6:2 Fluorotelomer sulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	8:2 Fluorotelomer sulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	DONA
T-WI12031 r10	TOP Pre-Prep	Solid	HFPODA
T-WI12031 r10	TOP Pre-Prep	Solid	NEtFOSAA
T-WI12031 r10	TOP Pre-Prep	Solid	NMeFOSAA
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorobutanesulfonic acid

## Accreditation/Certification Summary

Client: Sanborn Head & Associates Inc  
 Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

### Laboratory: Eurofins Lancaster Laboratories Env, LLC (Continued)

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

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorobutanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorodecanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorodecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorododecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluoroheptanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluoroheptanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorohexadecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorohexanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorohexanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorononanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorononanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorooctadecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorooctanesulfonamide
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorooctanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorooctanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluoropentanesulfonic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluoropentanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorotetradecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluorotridecanoic acid
T-WI12031 r10	TOP Pre-Prep	Solid	Perfluoroundecanoic acid





# Method Summary

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

Method	Method Description	Protocol	Laboratory
537 TOP	Fluorinated Alkyl Substances	EPA	ELLE
Total PFCA-Dif	Total PFCA (Treatment Difference)	TAL SOP	ELLE
Total PFCA-Sum	Total PFCA (Summary)	TAL SOP	ELLE
T-WI12031 r10	SOP(00037) T-PFAS-WI12031 Rev.10	ELLE - Lancaster	ELLE
Moisture	Percent Moisture	EPA	ELLE
Extract Aliquot	Preparation, Extract Aliquot	None	ELLE
TOP Post-Prep	Shake Extraction with Ultrasonic Bath Extraction	SW846	ELLE
TOP Pre-Prep	Shake Extraction with Ultrasonic Bath Extraction	SW846	ELLE

#### Protocol References:

ELLE - Lancaster = Eurofins Lancaster, Facility Standard Operating Procedure.

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Sample Summary

Client: Sanborn Head & Associates Inc  
Project/Site: Maine Background Soils Study

Job ID: 410-73303-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-73303-1	AR-01_20211115	Solid	11/15/21 13:00	02/17/22 11:37
410-73303-2	HA-03_20211118	Solid	11/18/21 17:00	02/17/22 11:37
410-73303-3	KE-01_20211117	Solid	11/17/21 11:20	02/17/22 11:37
410-73303-4	KE-04_20211117	Solid	11/17/21 09:10	02/17/22 11:37
410-73303-5	OX-03_20211116	Solid	11/16/21 10:20	02/17/22 11:37
410-73303-6	PI-01_11102021	Solid	11/10/21 12:50	02/17/22 11:37
410-73303-7	PI-02_20211119	Solid	11/19/21 10:05	02/17/22 11:37
410-73303-8	SA-02_20211118	Solid	11/18/21 08:15	02/17/22 11:37
410-73303-9	SA-03_11092021	Solid	11/09/21 09:15	02/17/22 11:37





Lancaster Laboratories Environmental

# Environmental Analysis



410-73303 Chain of Custody

istody

Acct. # \_\_\_\_\_ Group # \_\_\_\_\_

Client: <b>Sanborn Head &amp; Associates</b>				<b>Matrix</b>			<b>Analyses Requested</b>				<b>For Lab Use Only</b>	
Project Name/#: <b>Maine Background Soils Study</b>		Site ID #: <b>5060.00</b>		<input type="checkbox"/> Tissue	<input type="checkbox"/> Ground	<input type="checkbox"/> Surface	<b>Preservation and Filtration Codes</b>				SF #: _____	
Project Manager: <b>H. Roakes/ Troy Smith (Maine DEP)</b>		P.O. #:		<input type="checkbox"/> Potable	<input type="checkbox"/> NPDES						SCR #: _____	
Email: <b>hroakes@sanbornhead.com</b>		PWSID #:		<input type="checkbox"/> Soil	<input type="checkbox"/> Water	<input type="checkbox"/> Other:					<b>Preservation Codes</b> H = HCl                      T = Thiosulfate N = HNO <sub>3</sub> B = NaOH S = H <sub>2</sub> SO <sub>4</sub> P = H <sub>3</sub> PO <sub>4</sub> F = Field Filtered        O = Other	
Phone #: <b>603-229-1900</b>		Quote #: <b>41009206</b>		<input type="checkbox"/> Sediment								
State where samples were collected: <b>ME</b>		For Compliance Yes <input type="checkbox"/> No <input type="checkbox"/>										
Sample Identification		Collection		Grab	Composite	Soil	Water	Other:	Total # of Containers	TOP Assay - PFAS 28 List	Remarks	
AR-01_20211115	11/15/2021	13:00	X		X				1	X	Report detection to the MDL (e.g., include J-flags)	
HA-03_20211118	11/18/2021	17:00	X		X				1	X		
KE-01_20211117	11/17/2021	11:20	X		X				1	X	Between 11/11/2021 and 2/15/2022, samples were stored at -20 degrees C.	
KE-04_20211117	11/17/2021	9:10	X		X				1	X		
OX-03_20211116	11/16/2021	10:20	X		X				1	X	Send invoice to troy.t.smith@maine.gov.	
PI-01_11102021	11/10/2021	12:50	X		X				1	X	Level IV report. EDDs in MEDEP v6 format and 'SHA Standard' formats.	
PI-02_20211119	11/19/2021	10:05	X		X				1	X		
SA-02_20211118	11/18/2021	8:15	X		X				1	X		
SA-03_11092021	11/9/2021	9:15	X		X				1	X	Quote #41009206	
<b>Turnaround Time Requested (TAT)</b> (please check):				Standard <input checked="" type="checkbox"/>	Rush <input type="checkbox"/>	Relinquished by: <i>[Signature]</i>		Date: <b>2/15/22</b>	Time: <b>2:00</b>	Received by:	Date:	Time:
(Rush TAT is subject to laboratory approval and surcharges.)												
<b>Date results are needed:</b>						Relinquished by:		Date:	Time:	Received by:	Date:	Time:
Rush results requested by (please check):				E-Mail <input type="checkbox"/>	Phone <input type="checkbox"/>							
E-mail Address:						Relinquished by:		Date:	Time:	Received by:	Date:	Time:
Phone:												
<b>Data Package Options</b> (please check if required)						Relinquished by:		Date:	Time:	Received by:	Date:	Time:
T Level IV report. <input type="checkbox"/>	P) <input type="checkbox"/>	MA MCP	<input type="checkbox"/>									
T <input type="checkbox"/>	P) <input type="checkbox"/>	CT RCP	<input type="checkbox"/>									
Type VI (Raw Data Only)	<input type="checkbox"/>	TX TRRP-13	<input type="checkbox"/>									
NJ DKQP	<input type="checkbox"/>	NYSDEC Category	<input type="checkbox"/>	A or	<input type="checkbox"/>							
<b>EDD Required?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				If yes, format: _____		Relinquished by Commercial Carrier:				Temperature upon receipt <b>2.1</b> °C		
				MEDEP v6 & SHA Standard		UPS _____ FedEx <input checked="" type="checkbox"/> Other _____						

## Login Sample Receipt Checklist

Client: Sanborn Head & Associates Inc

Job Number: 410-73303-1

**Login Number: 73303**

**List Source: Eurofins Lancaster Laboratories Env, LLC**

**List Number: 1**

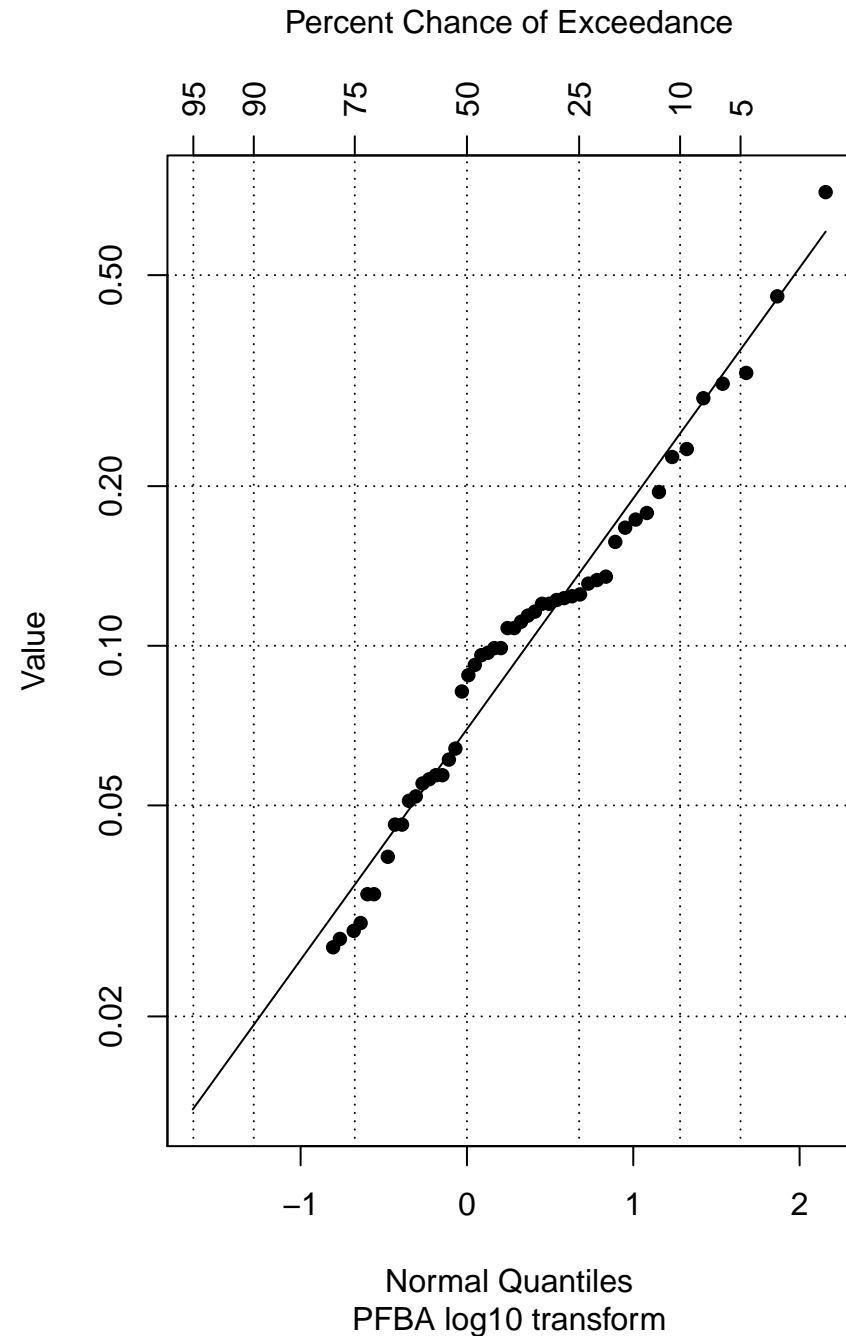
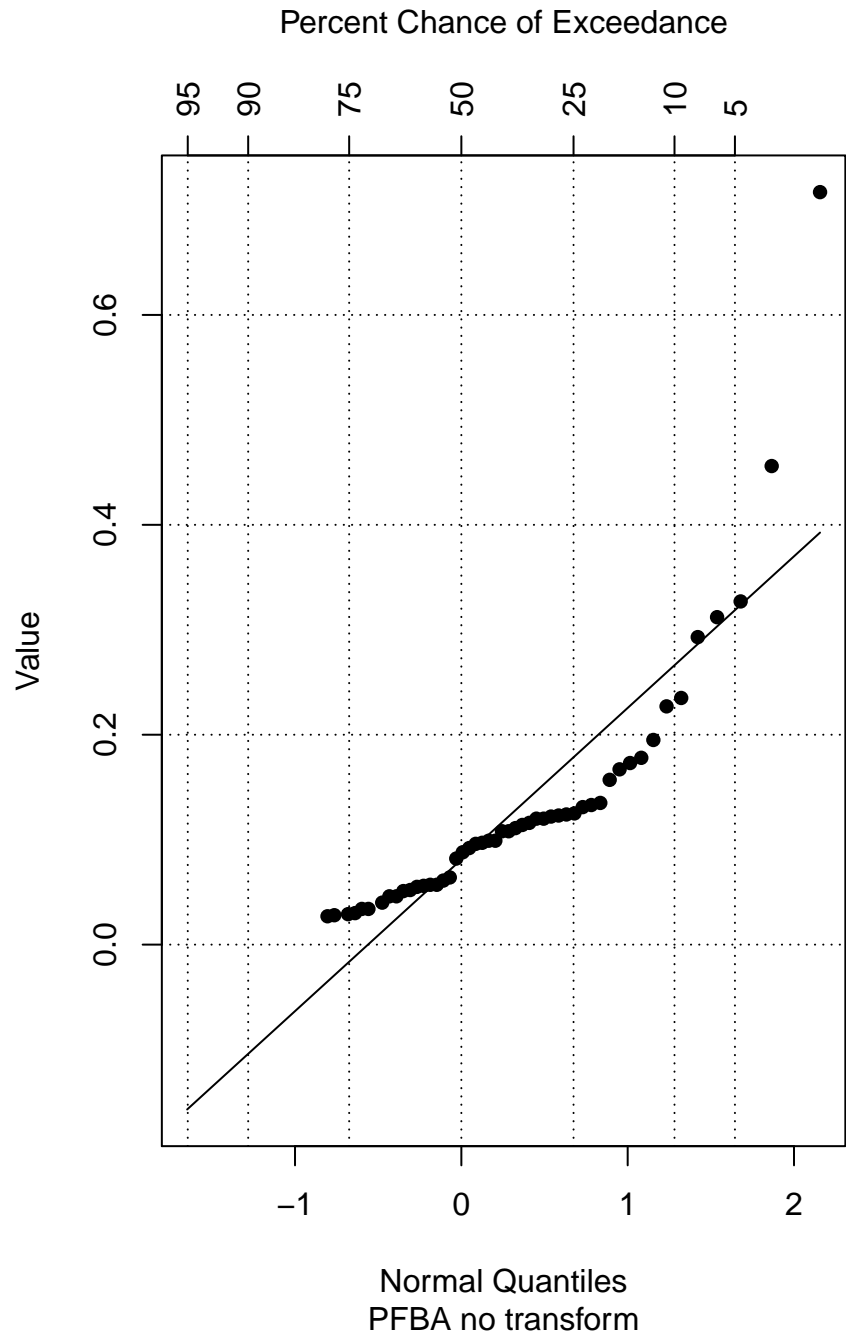
**Creator: Jeremiah, Cory T**

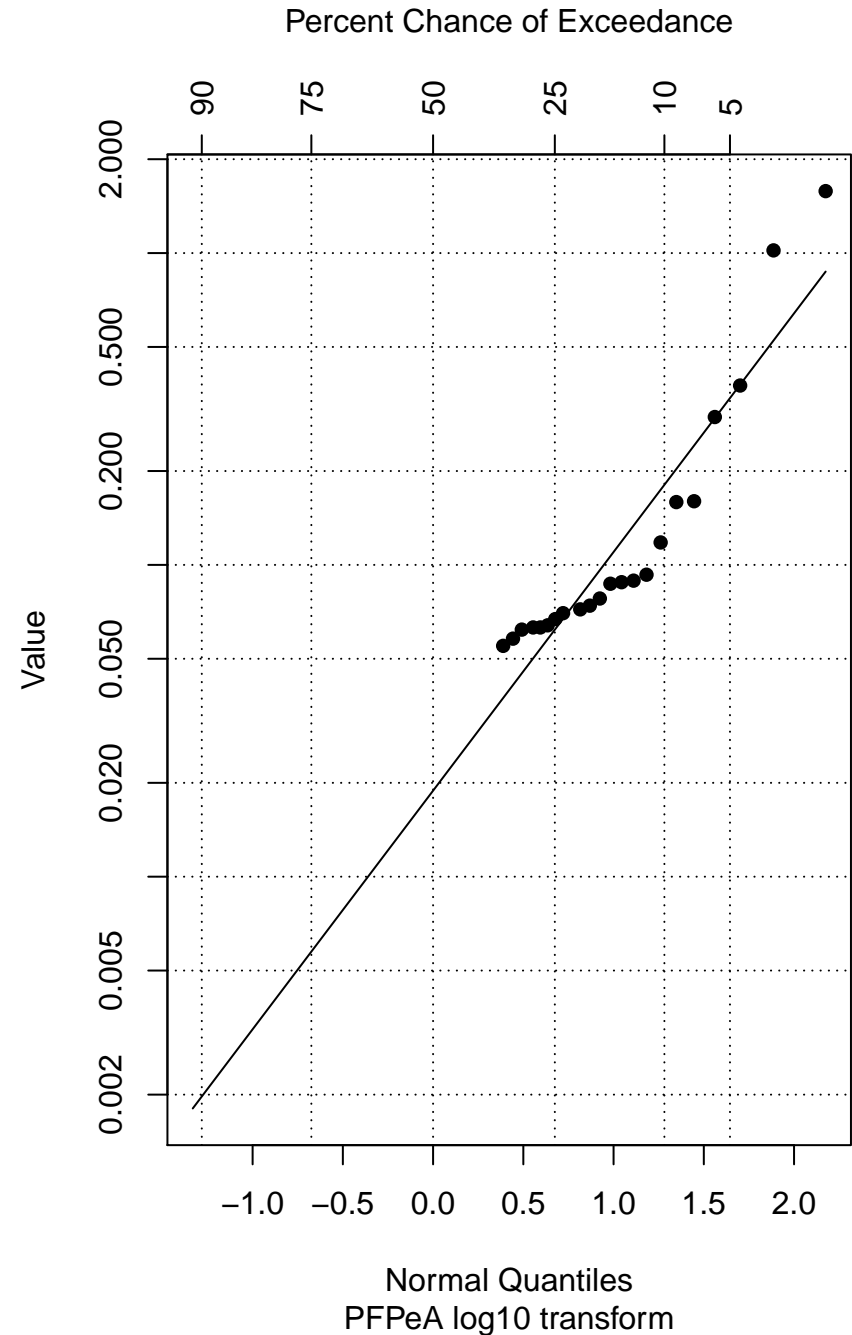
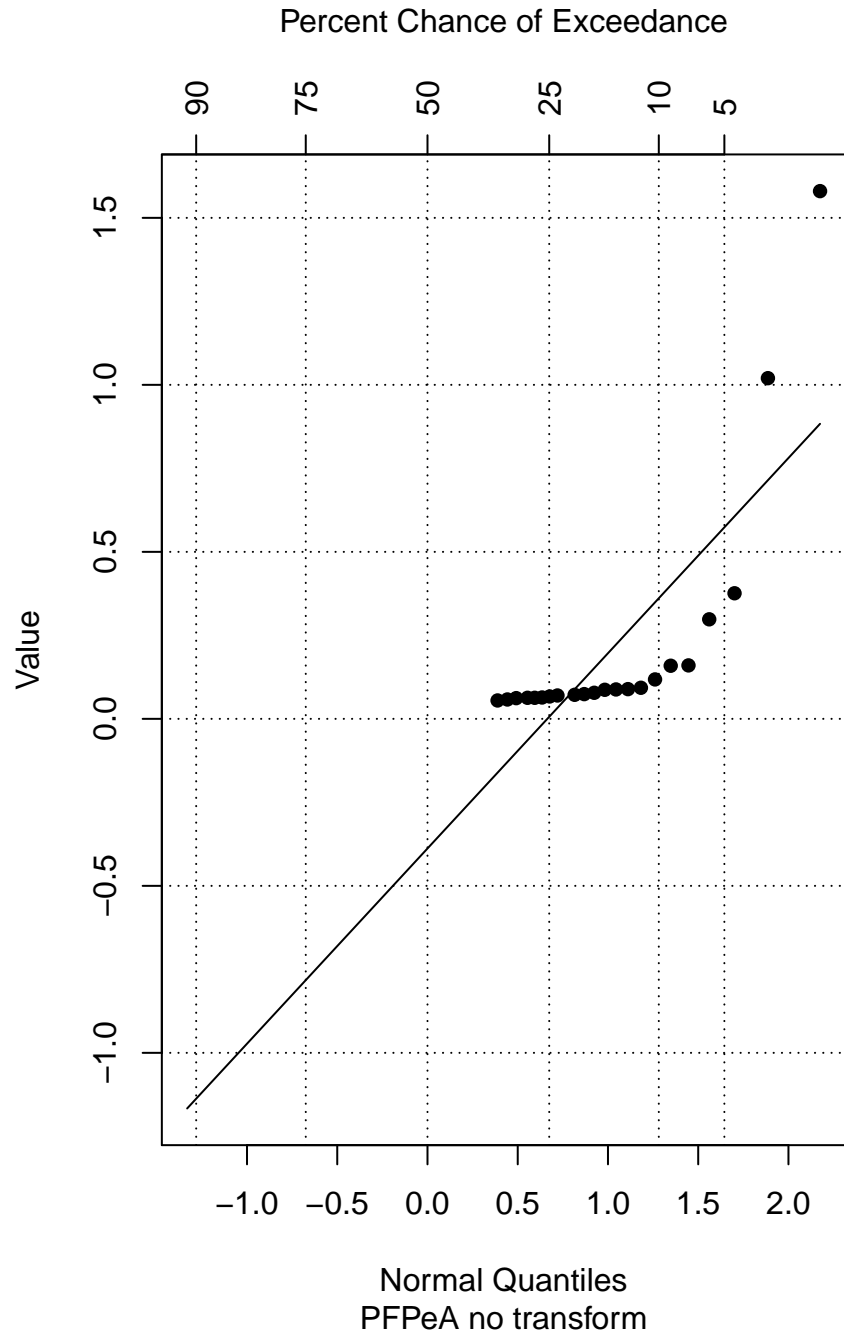
Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	

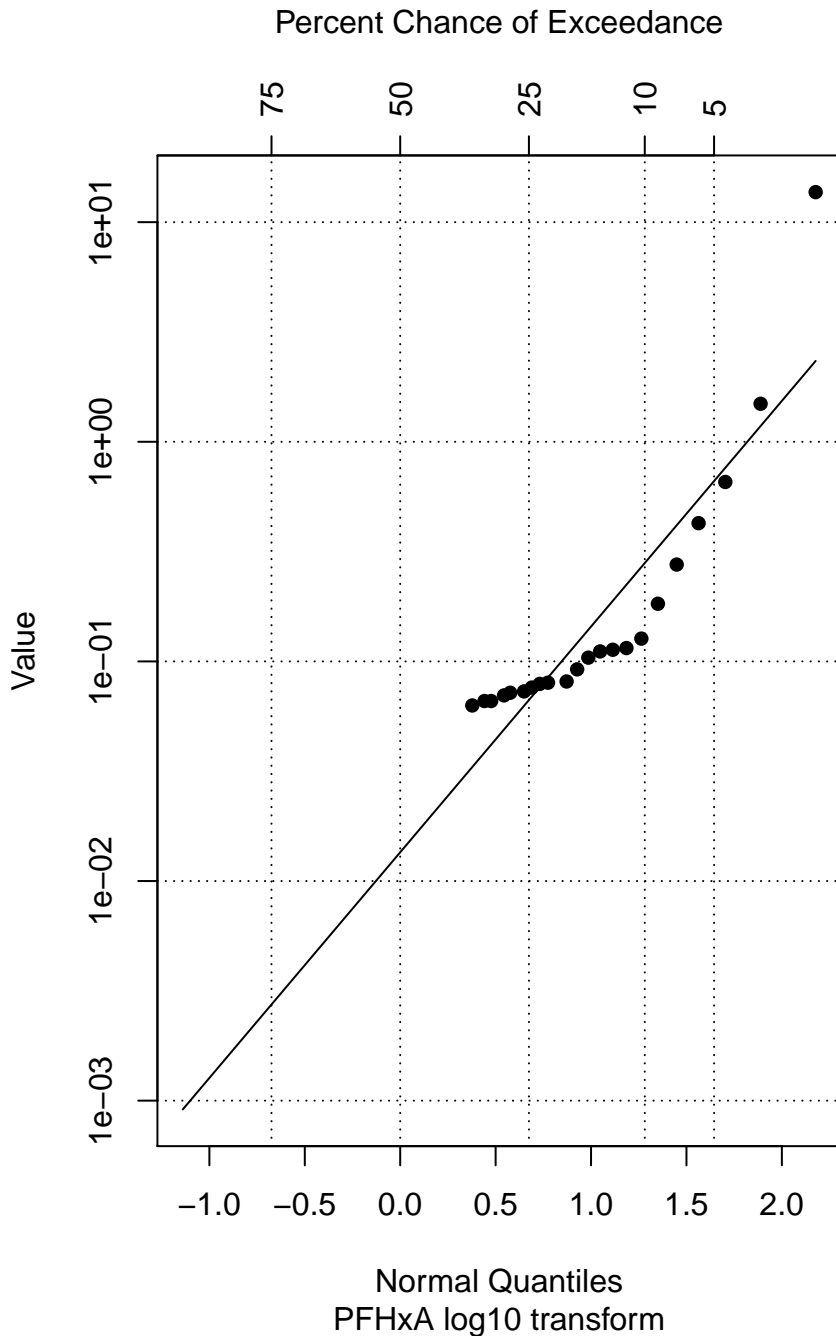
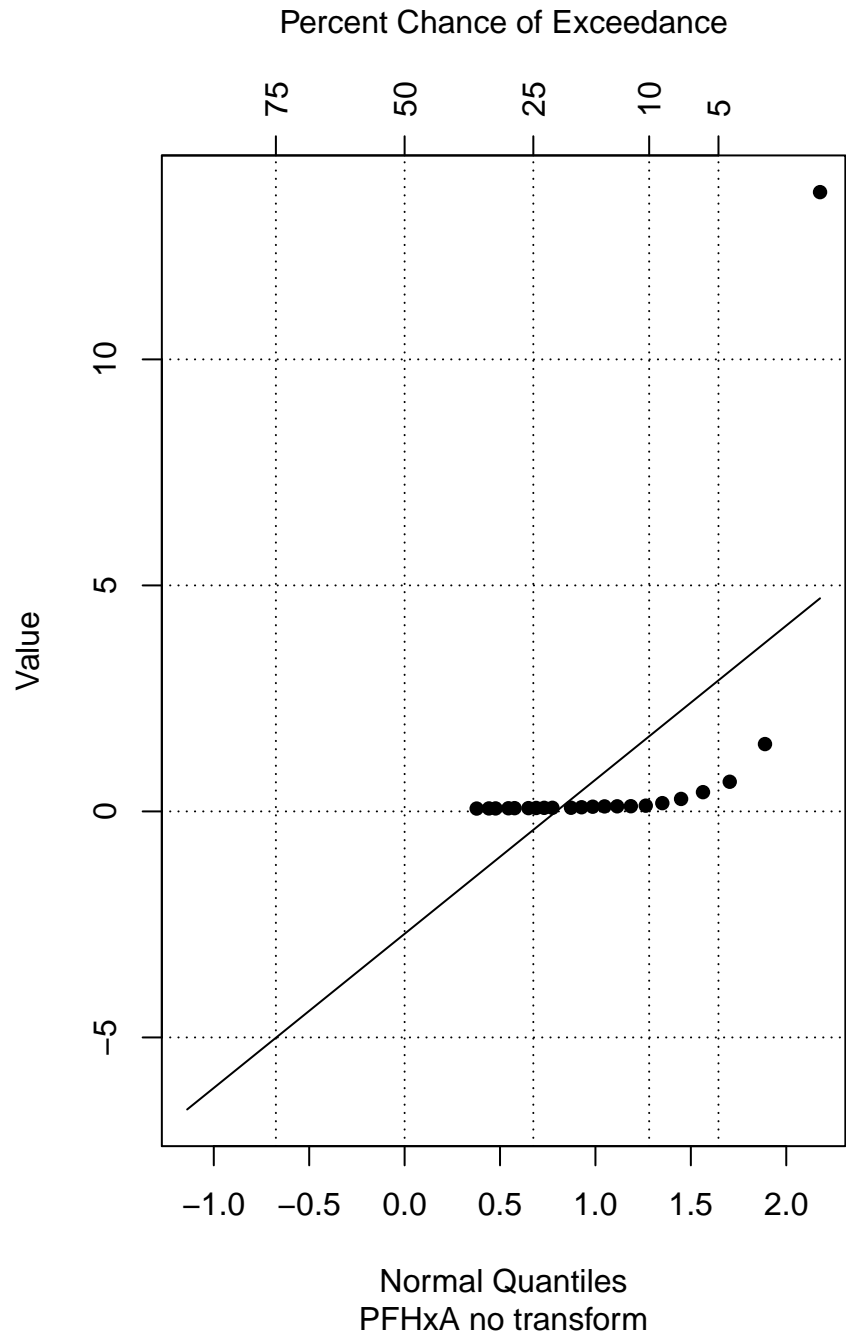


## **APPENDIX F**

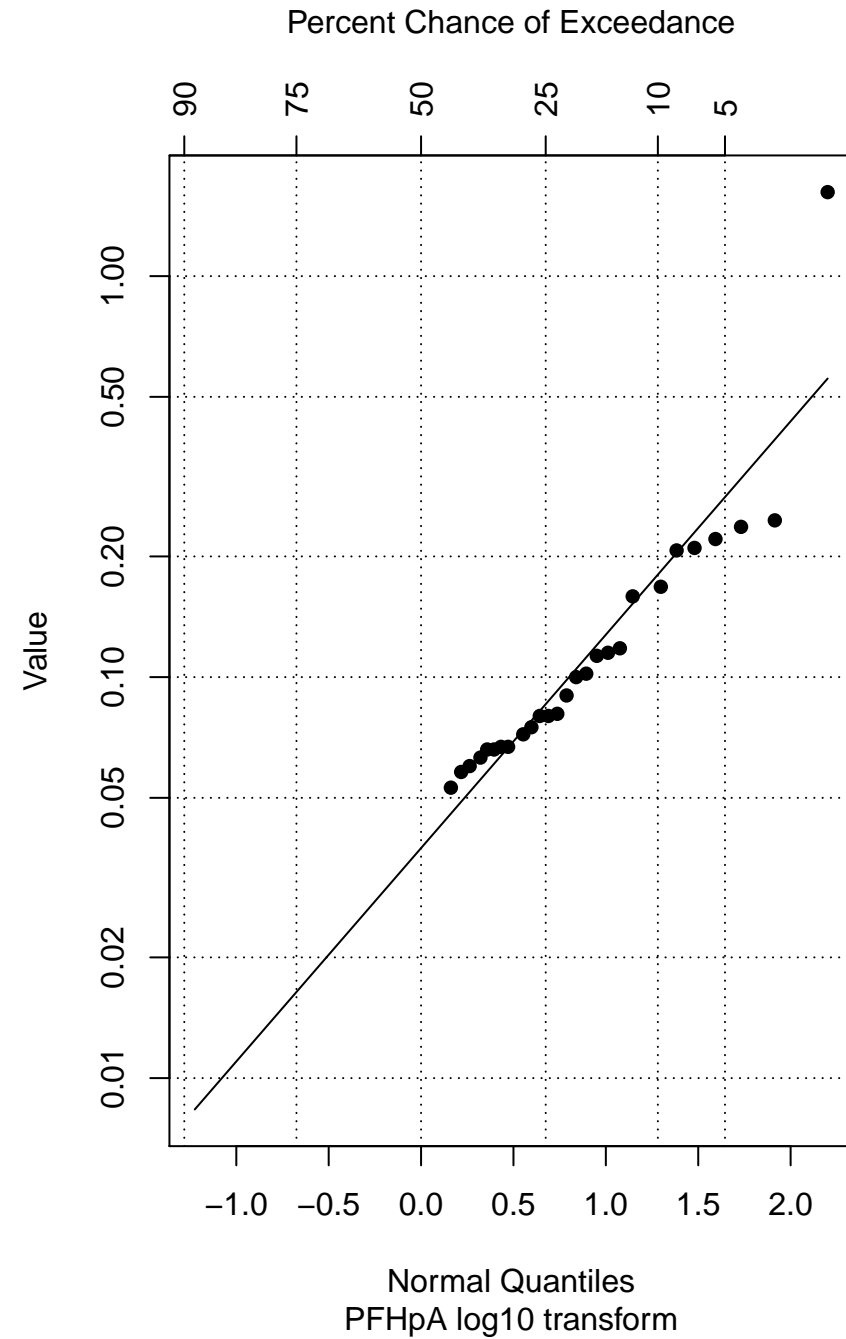
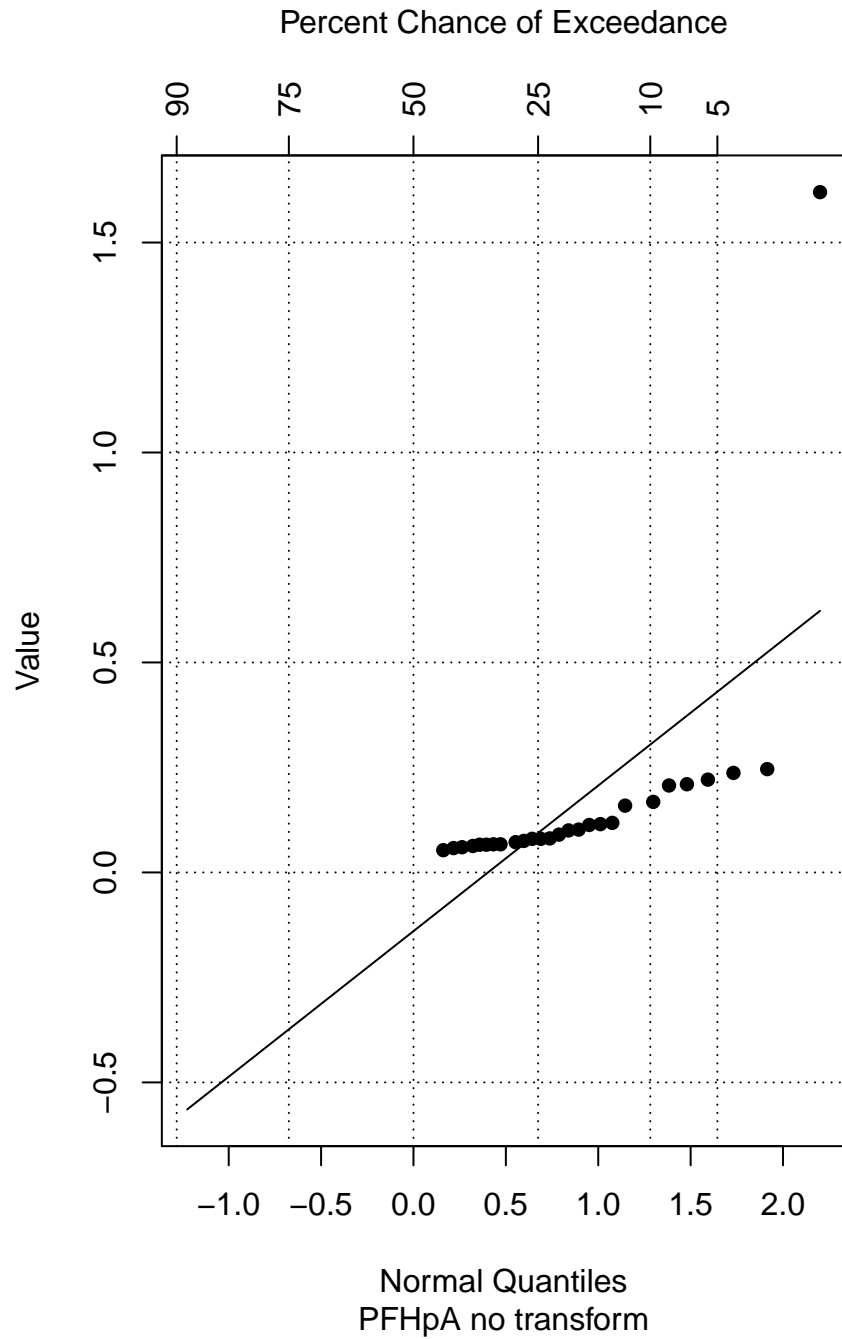
### **Q-Q PLOTS**

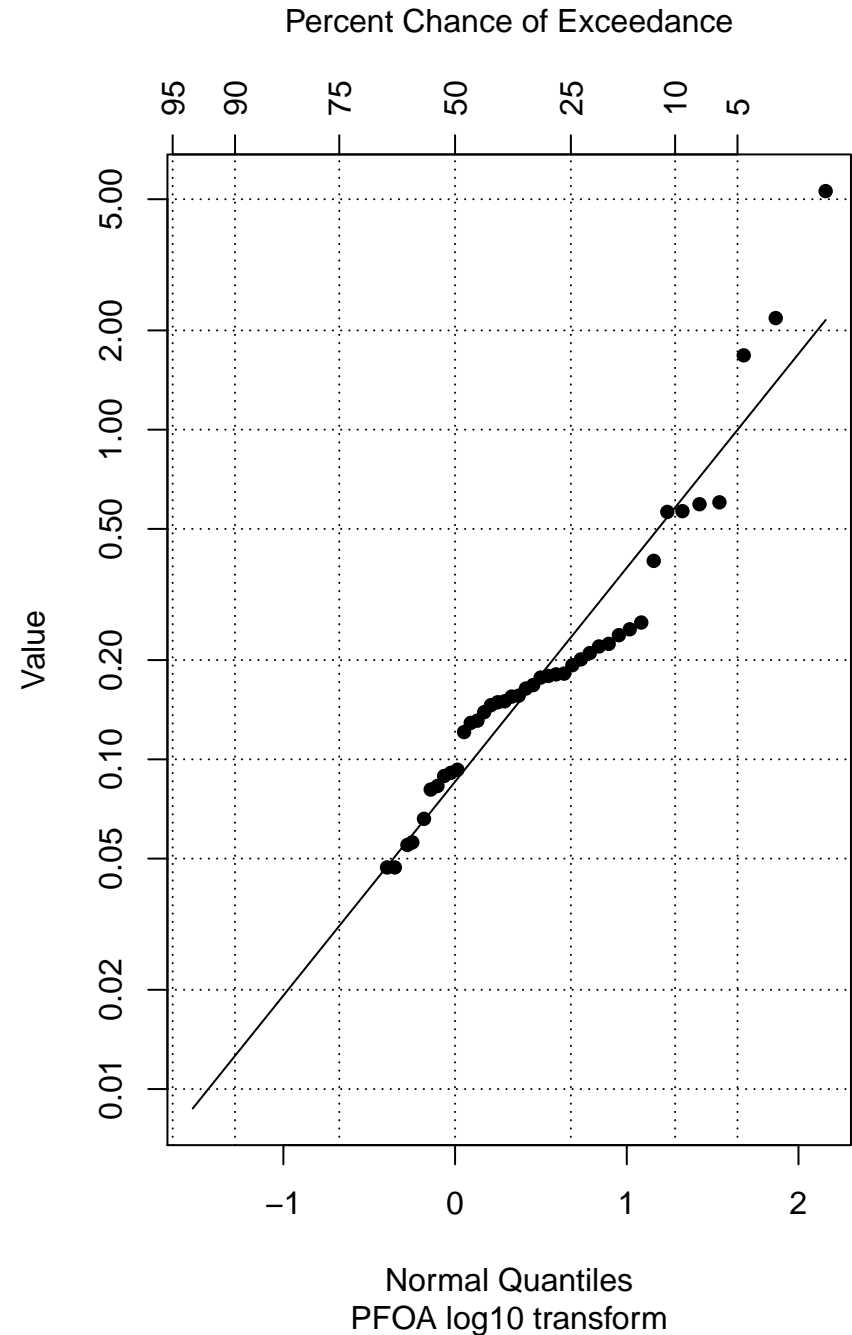
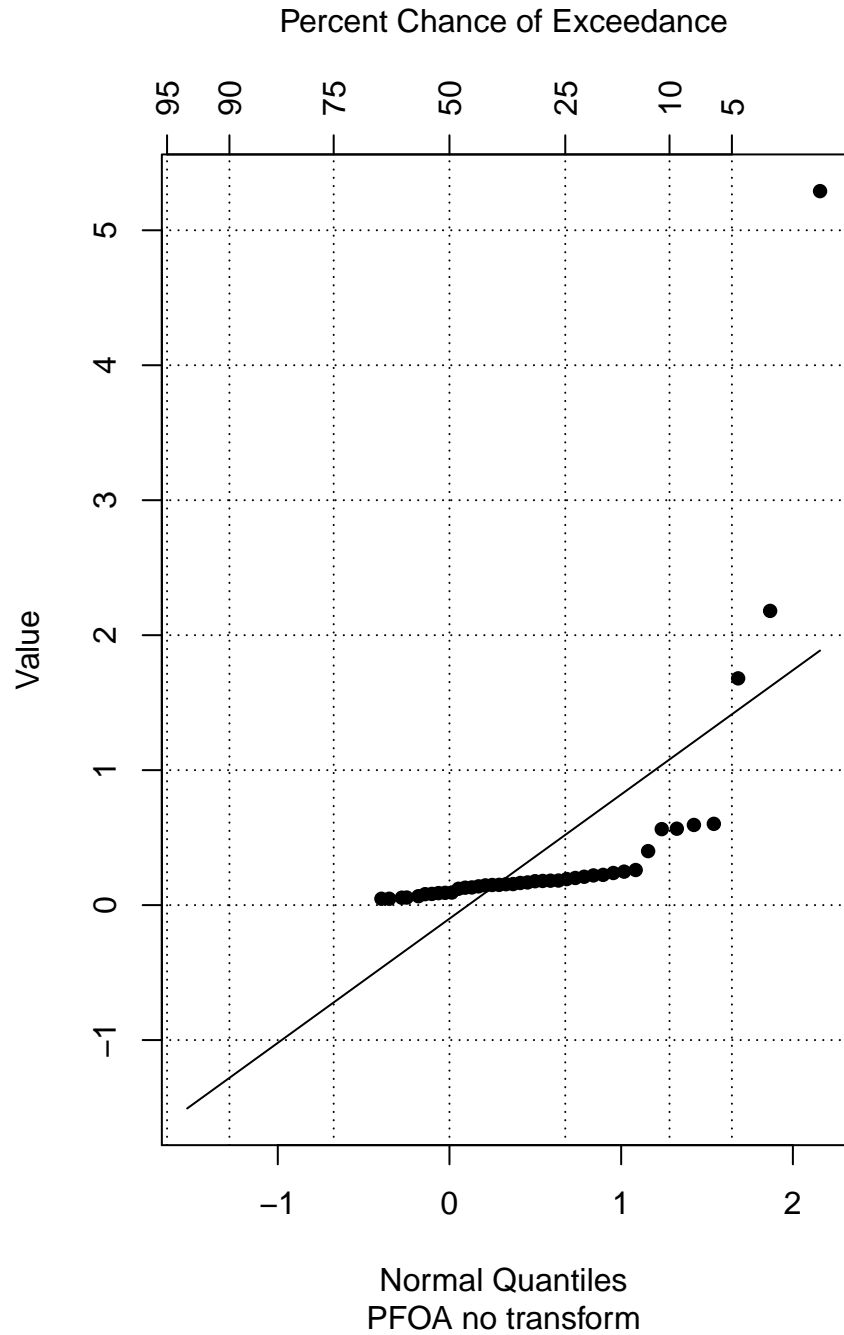


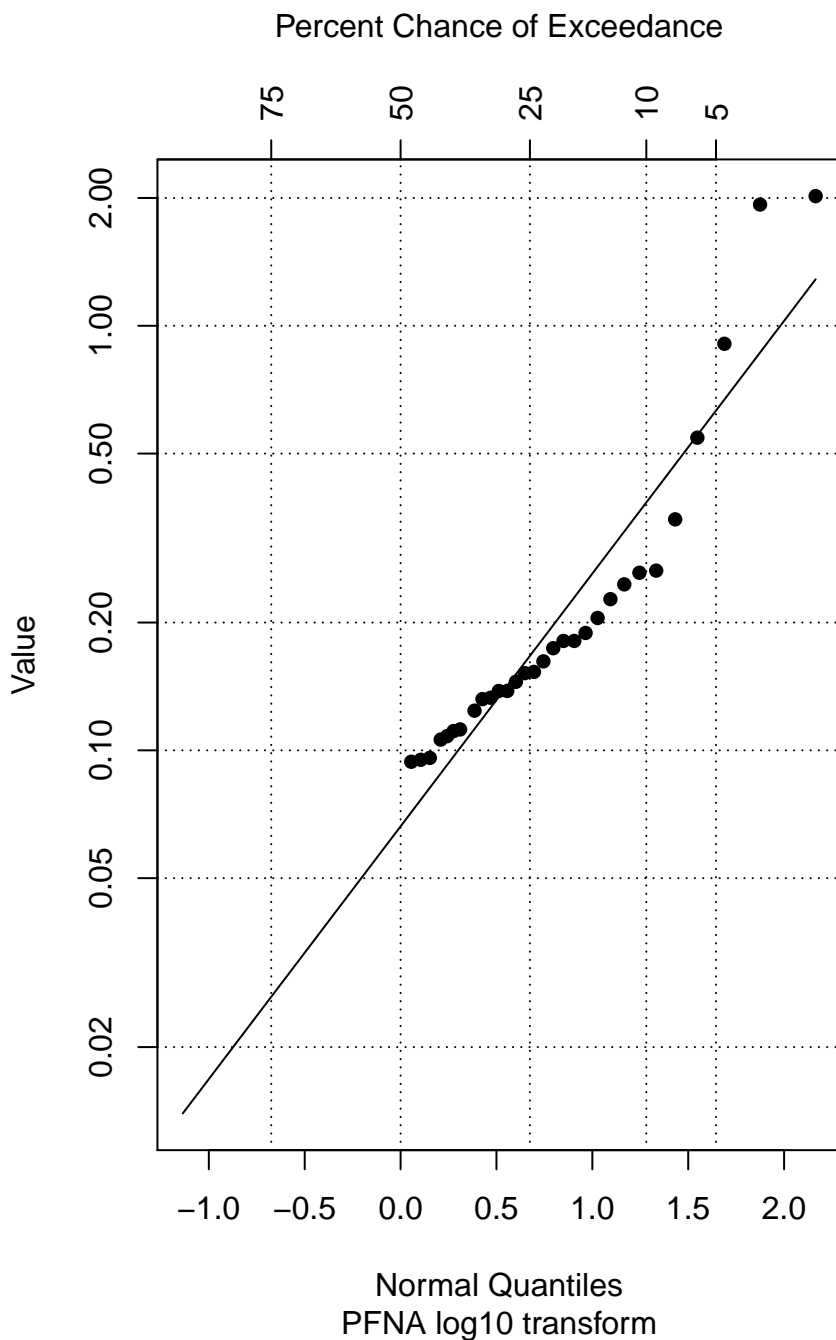
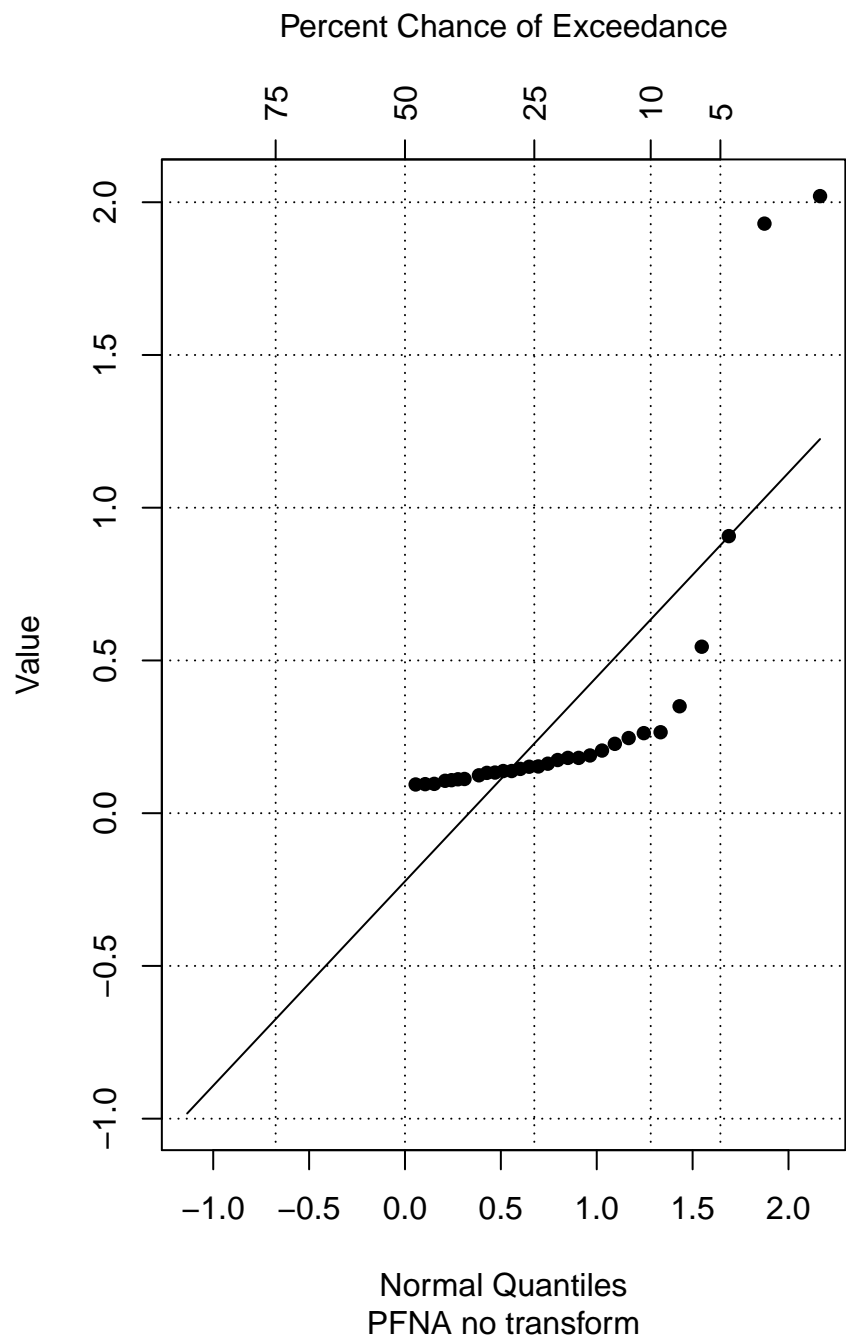


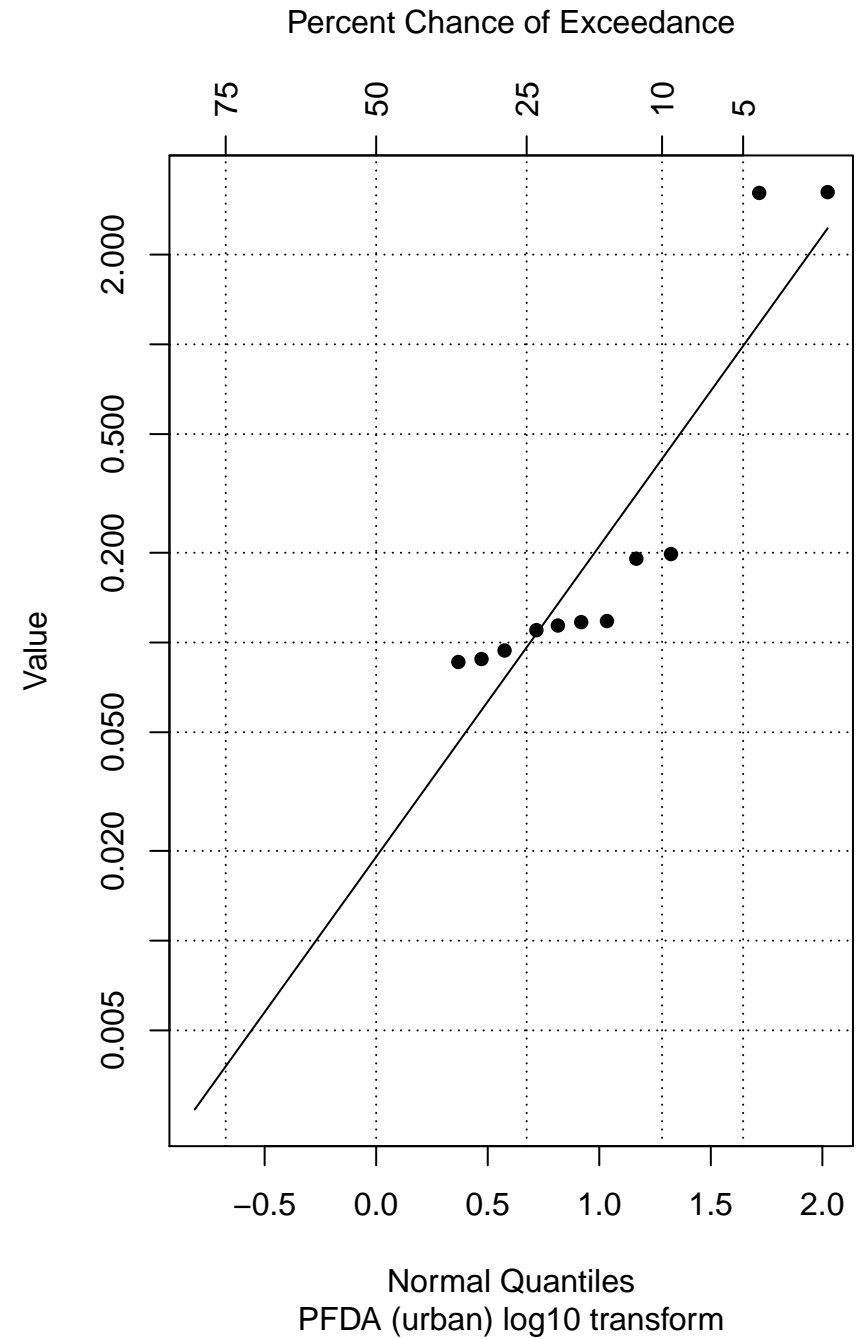
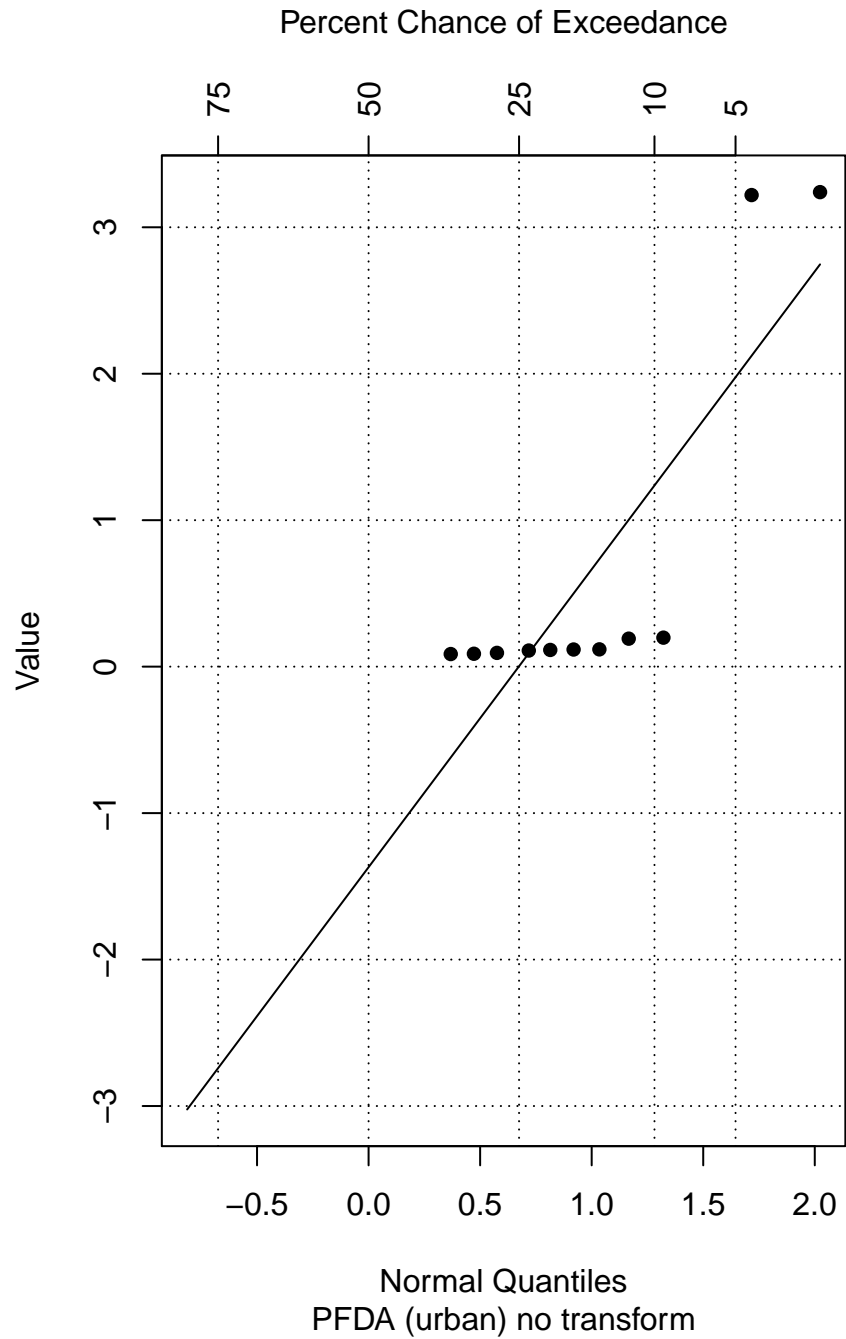


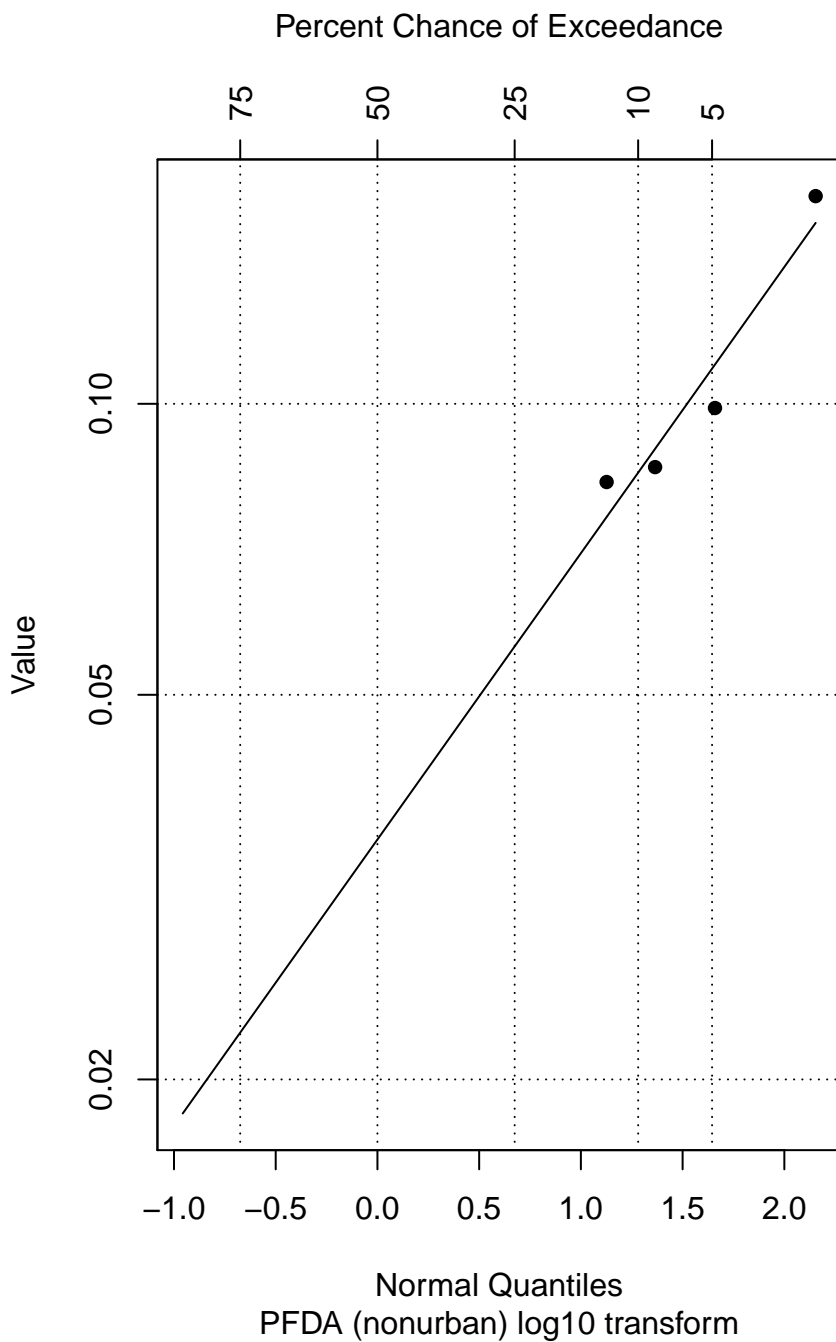
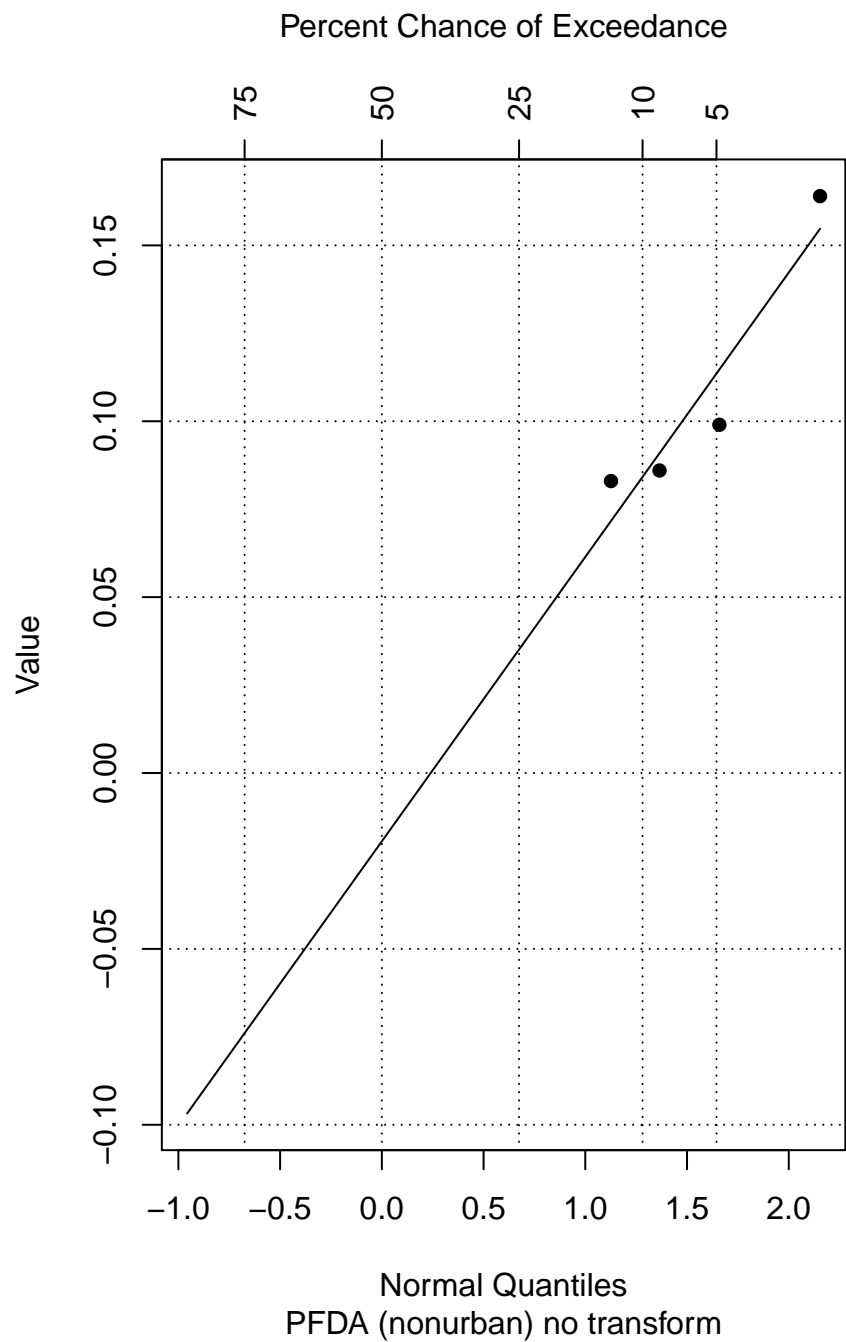


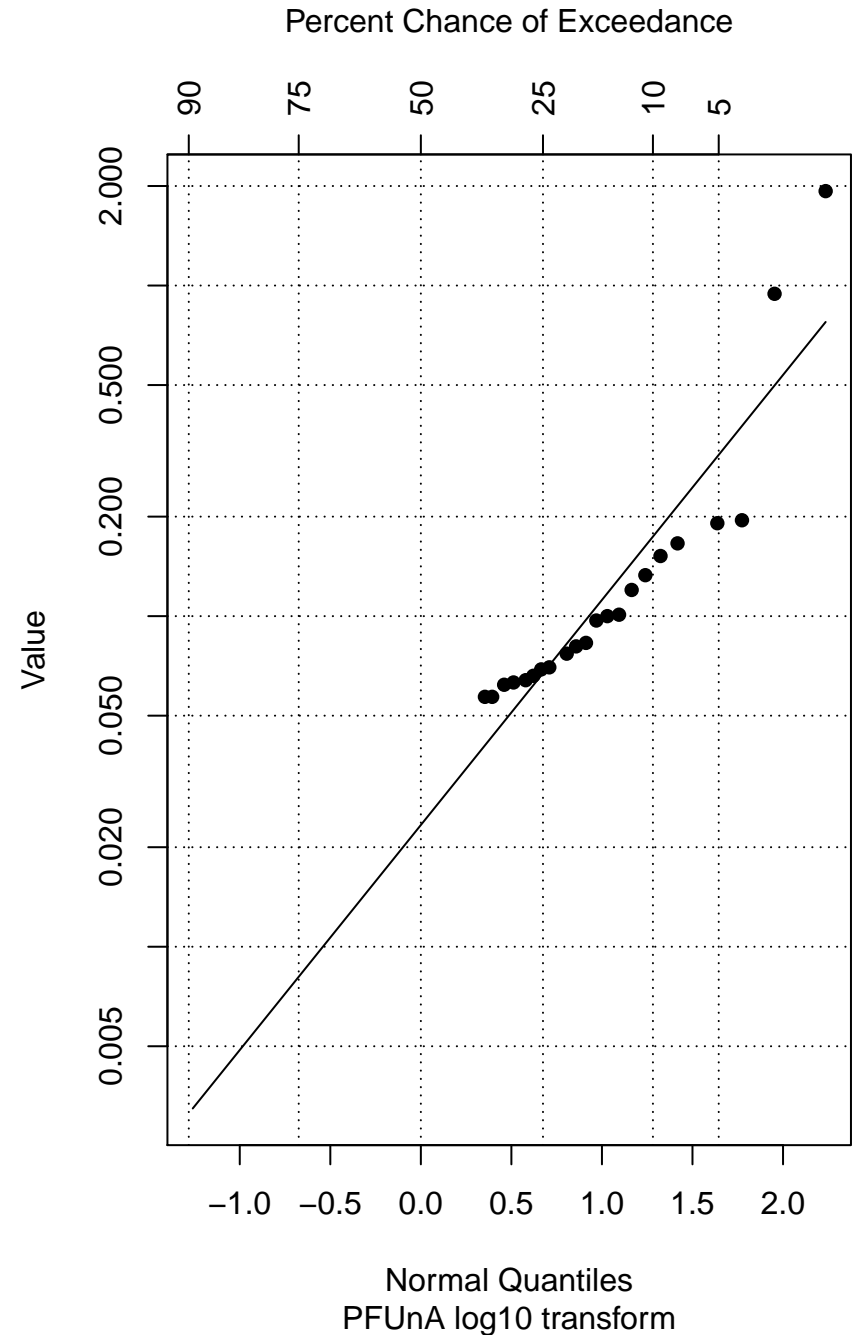
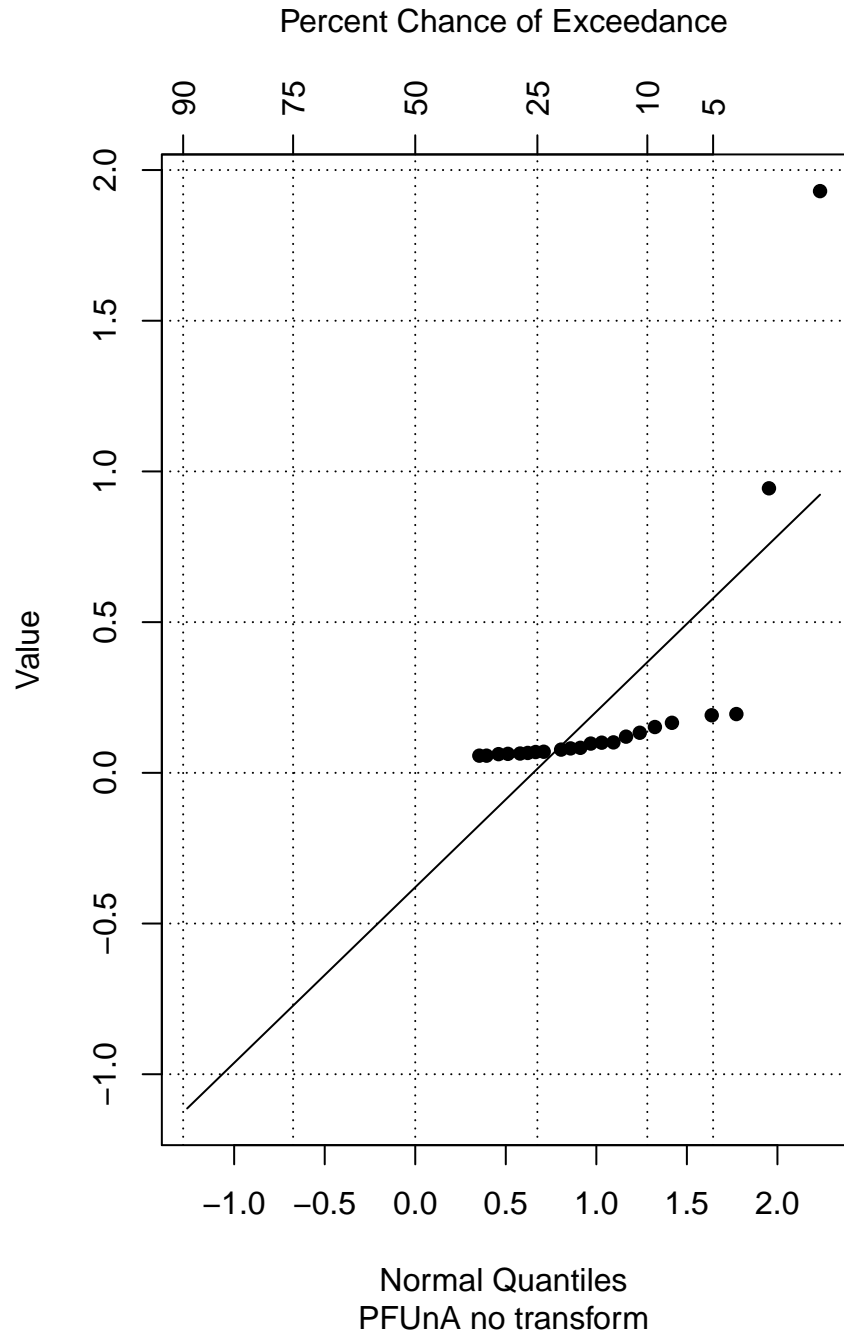


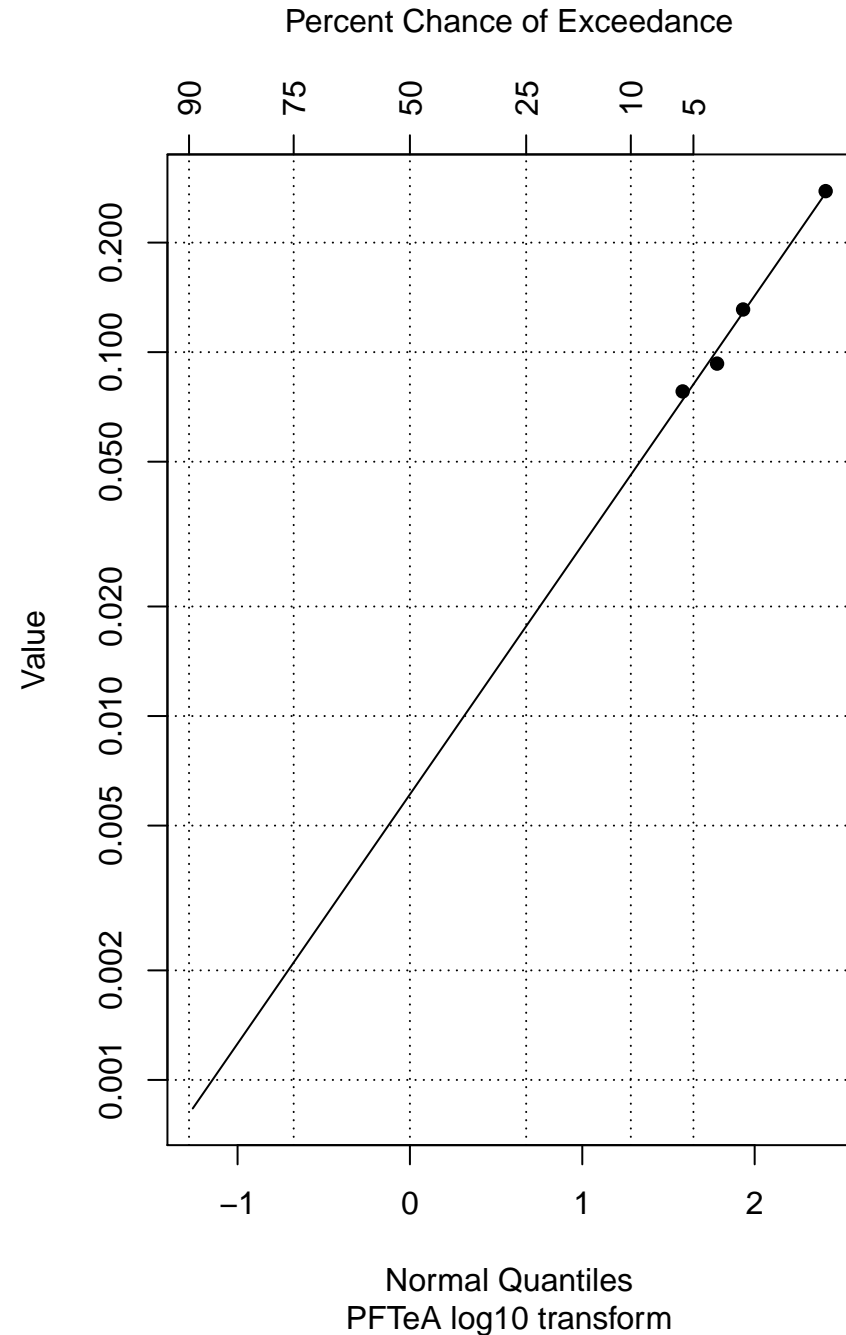
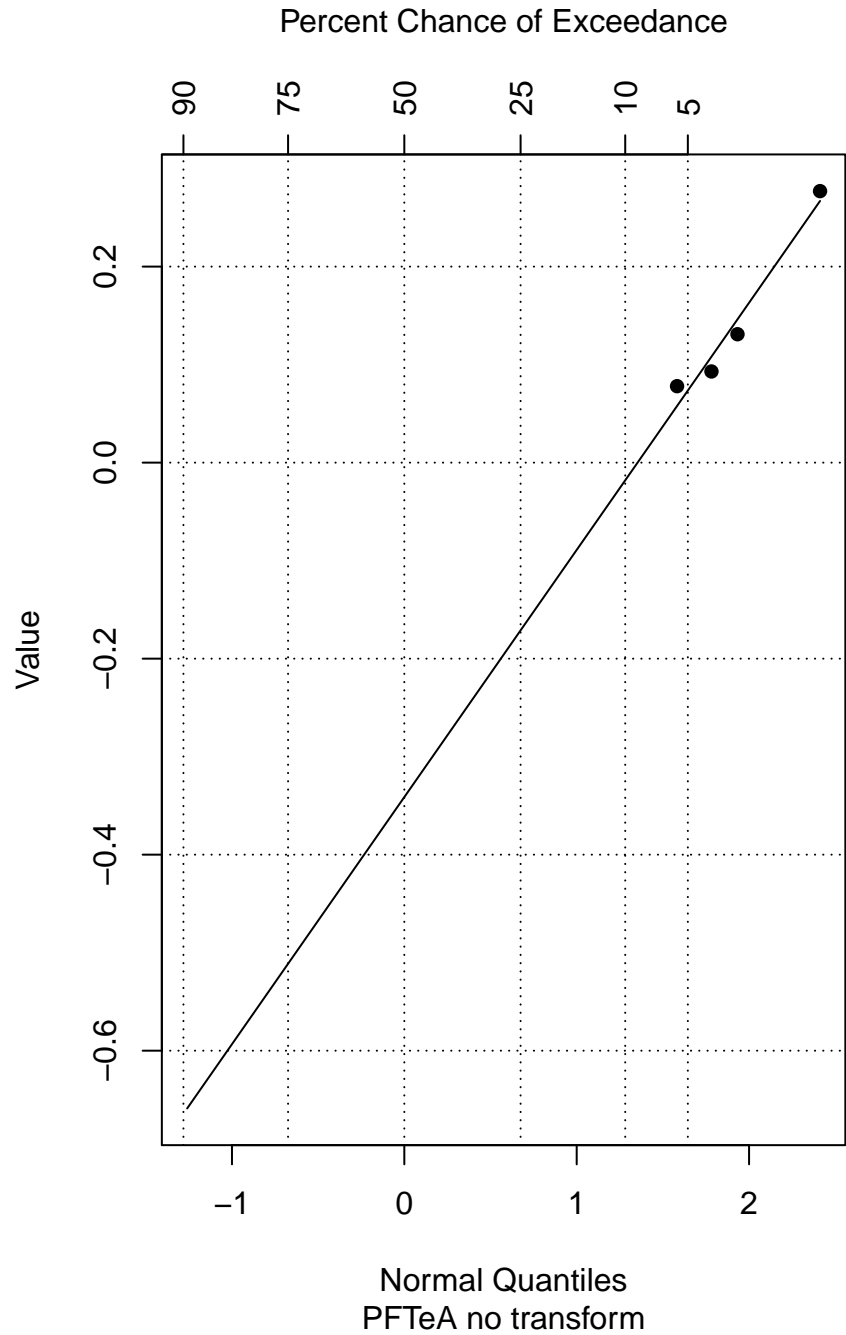


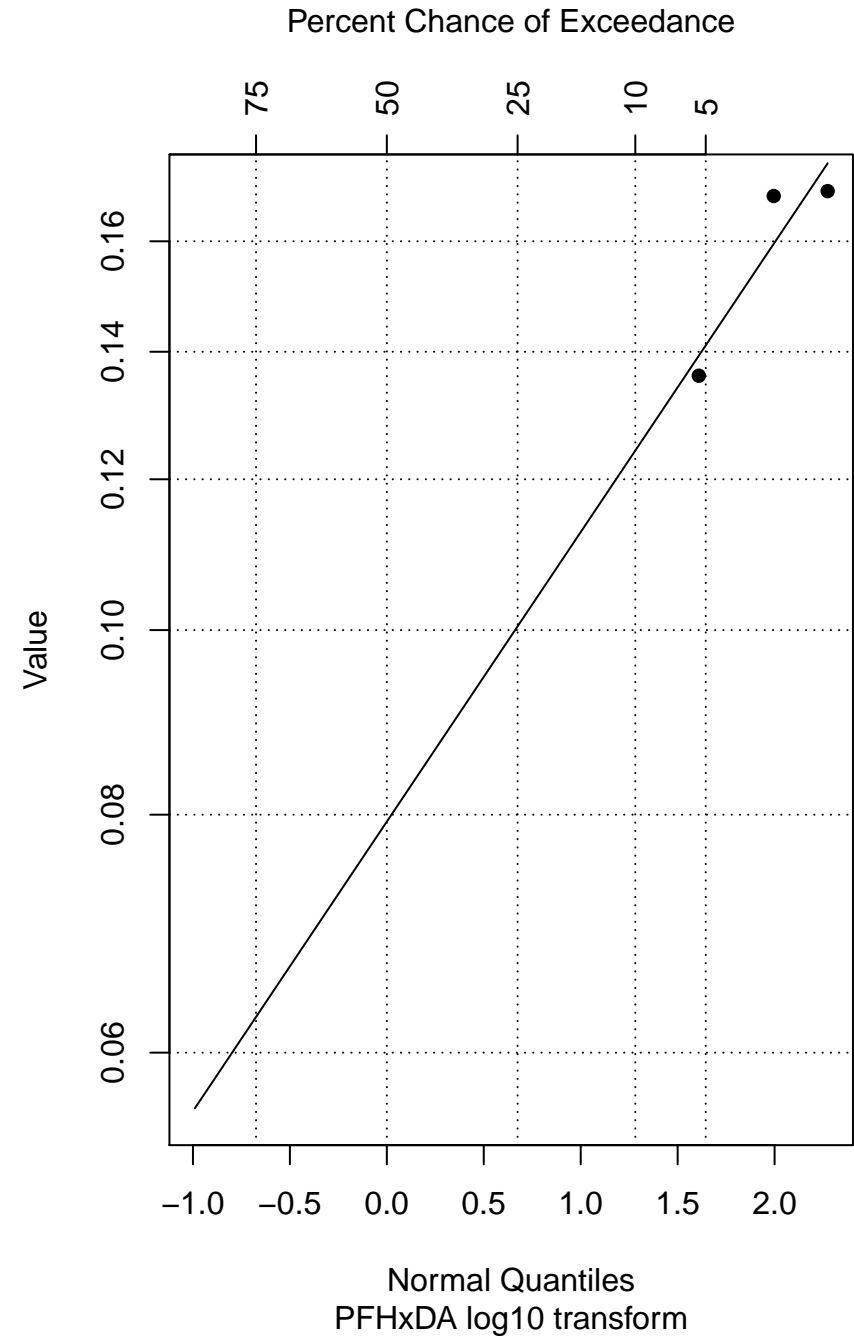
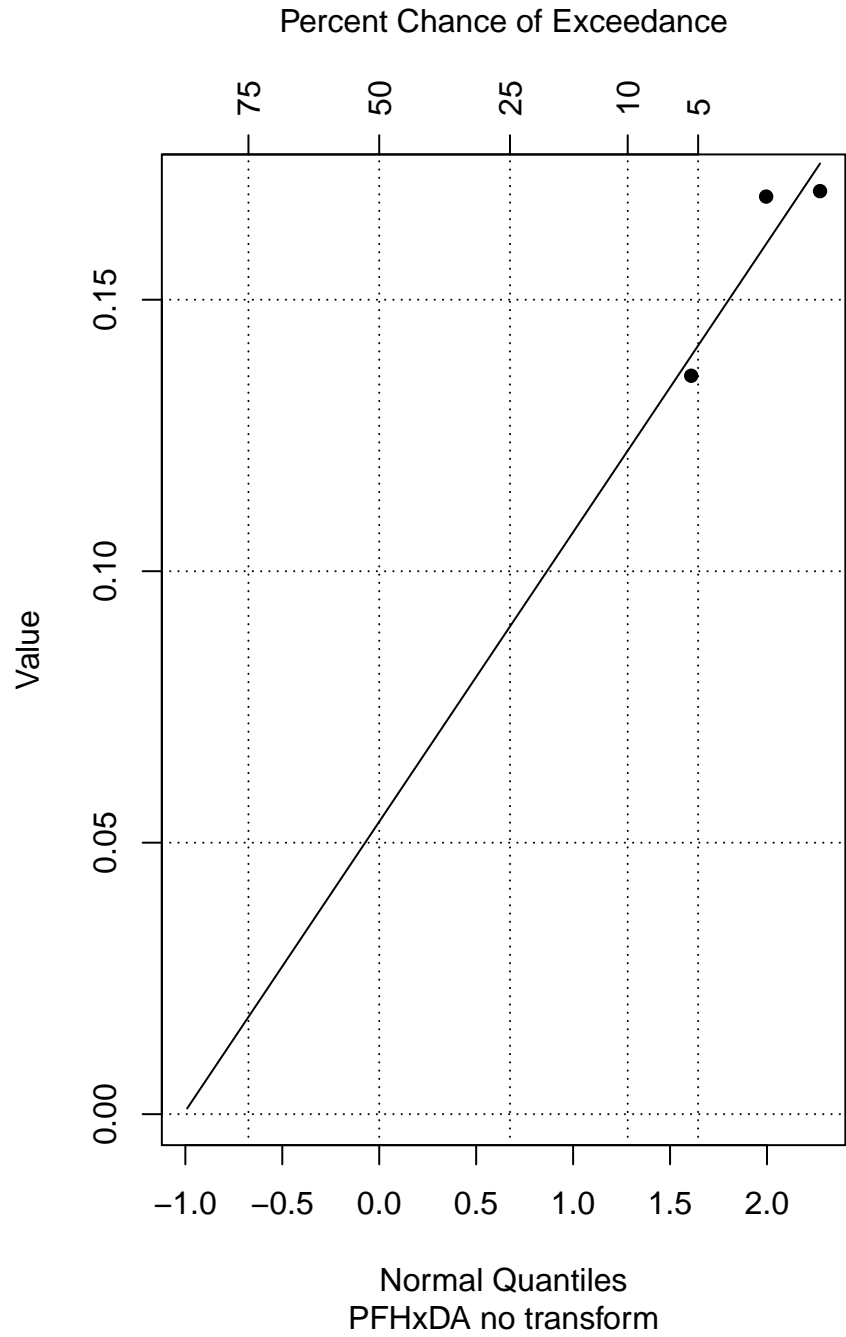




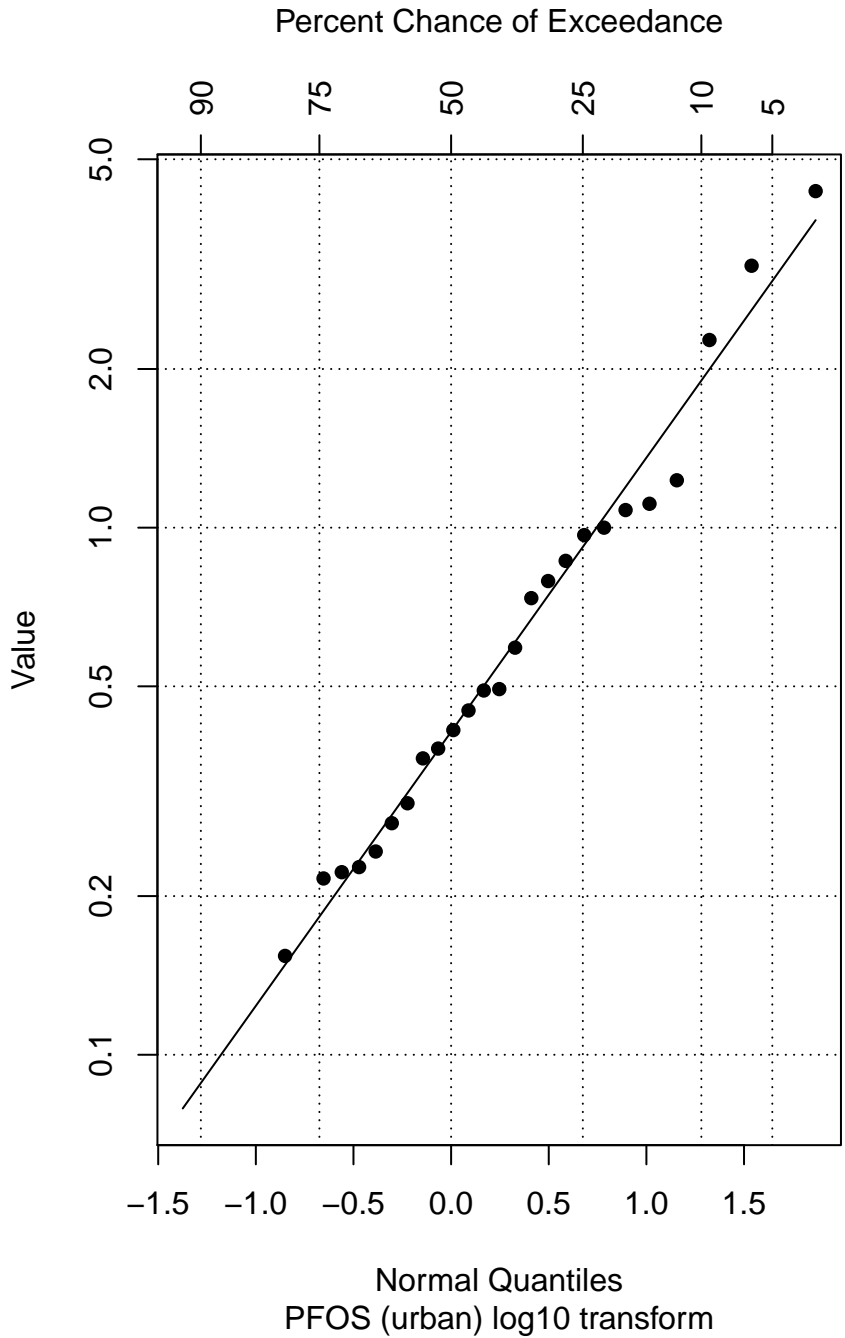
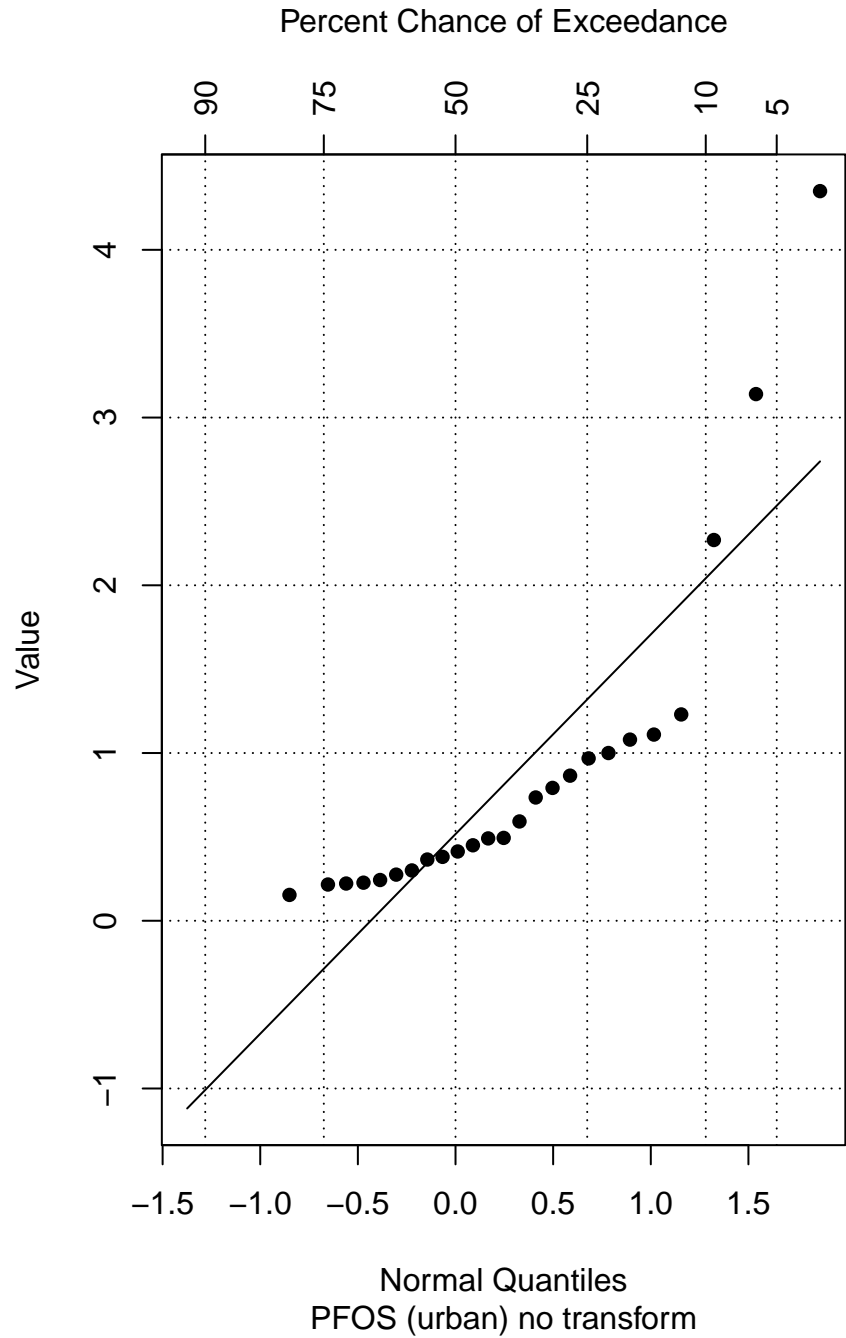


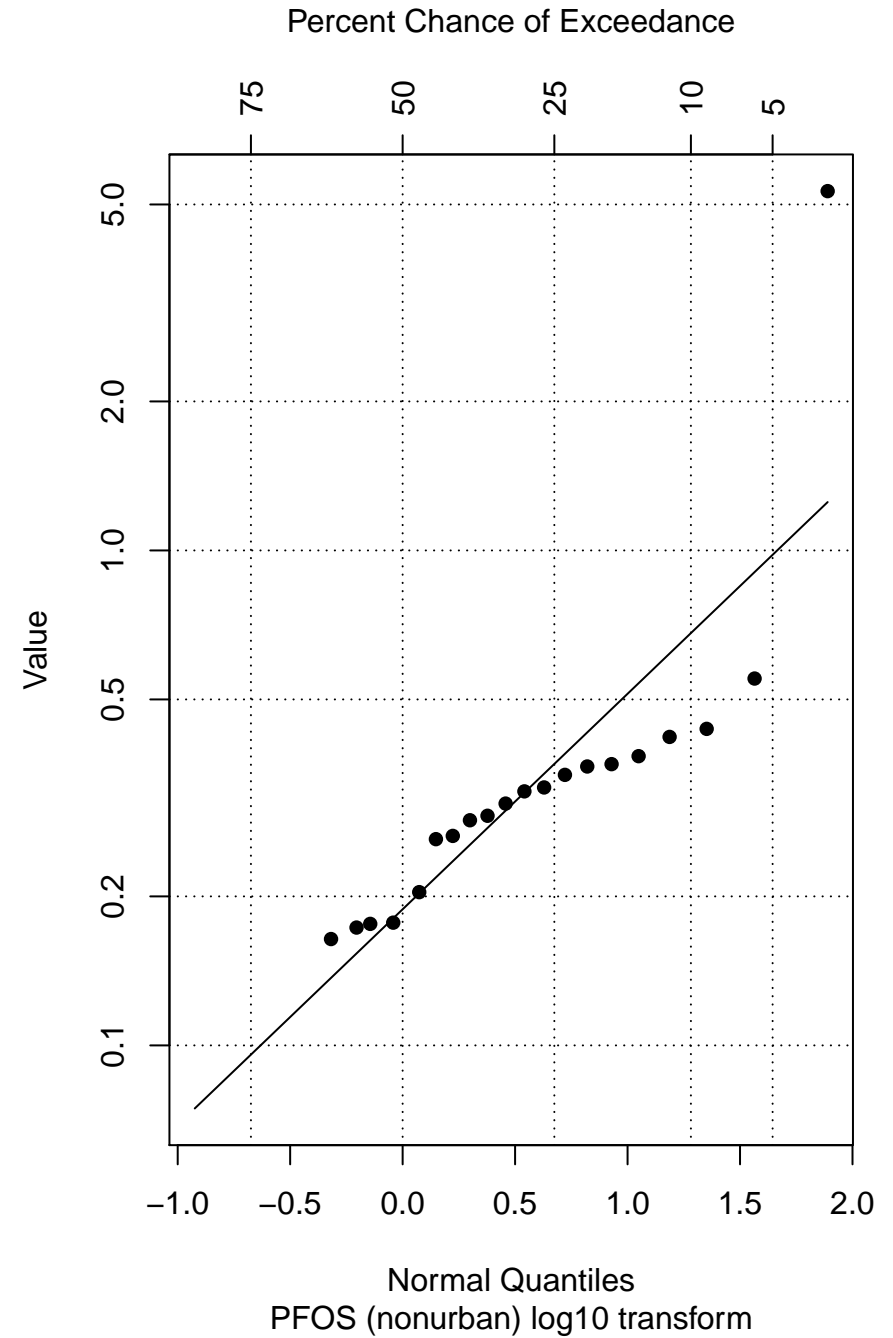
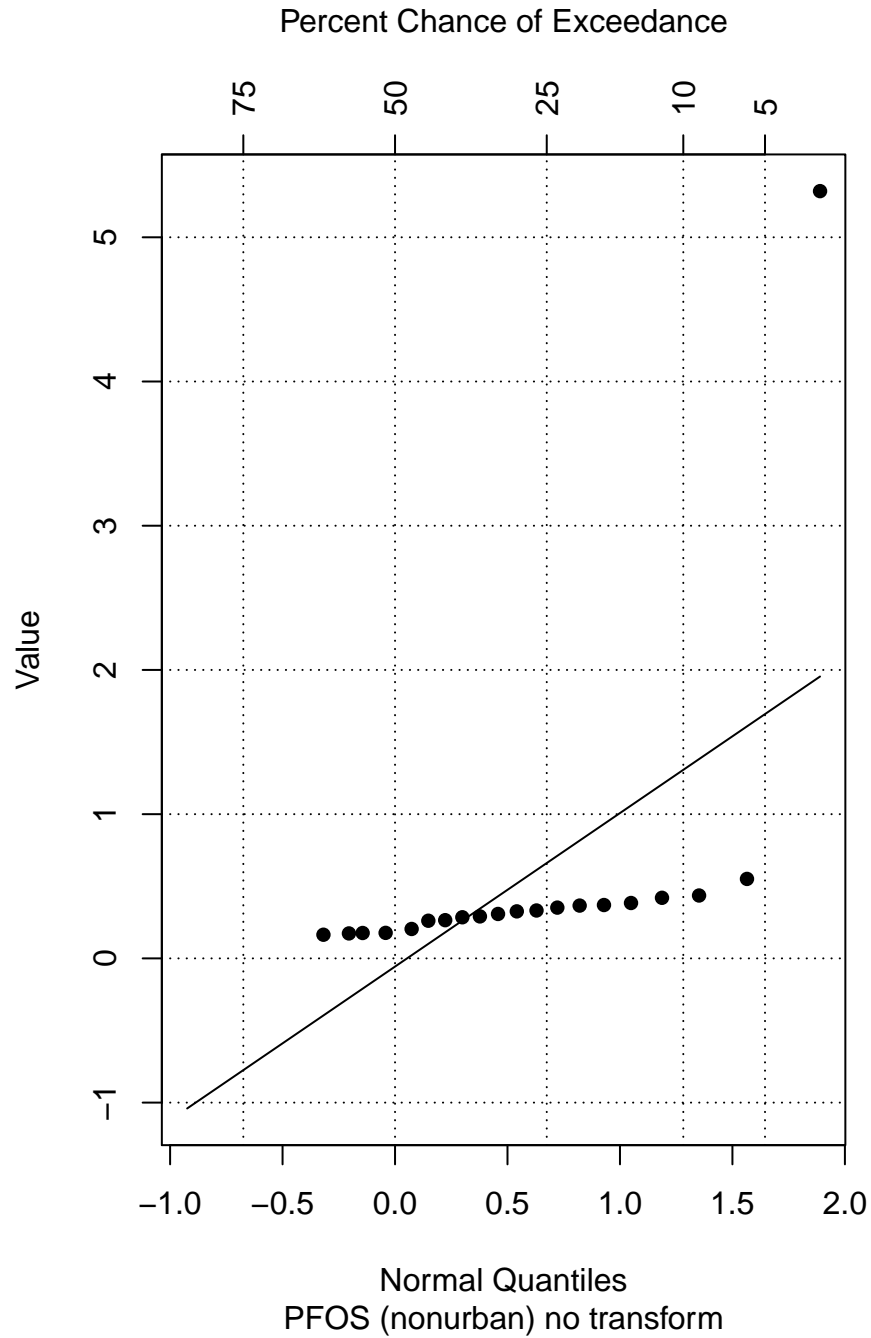


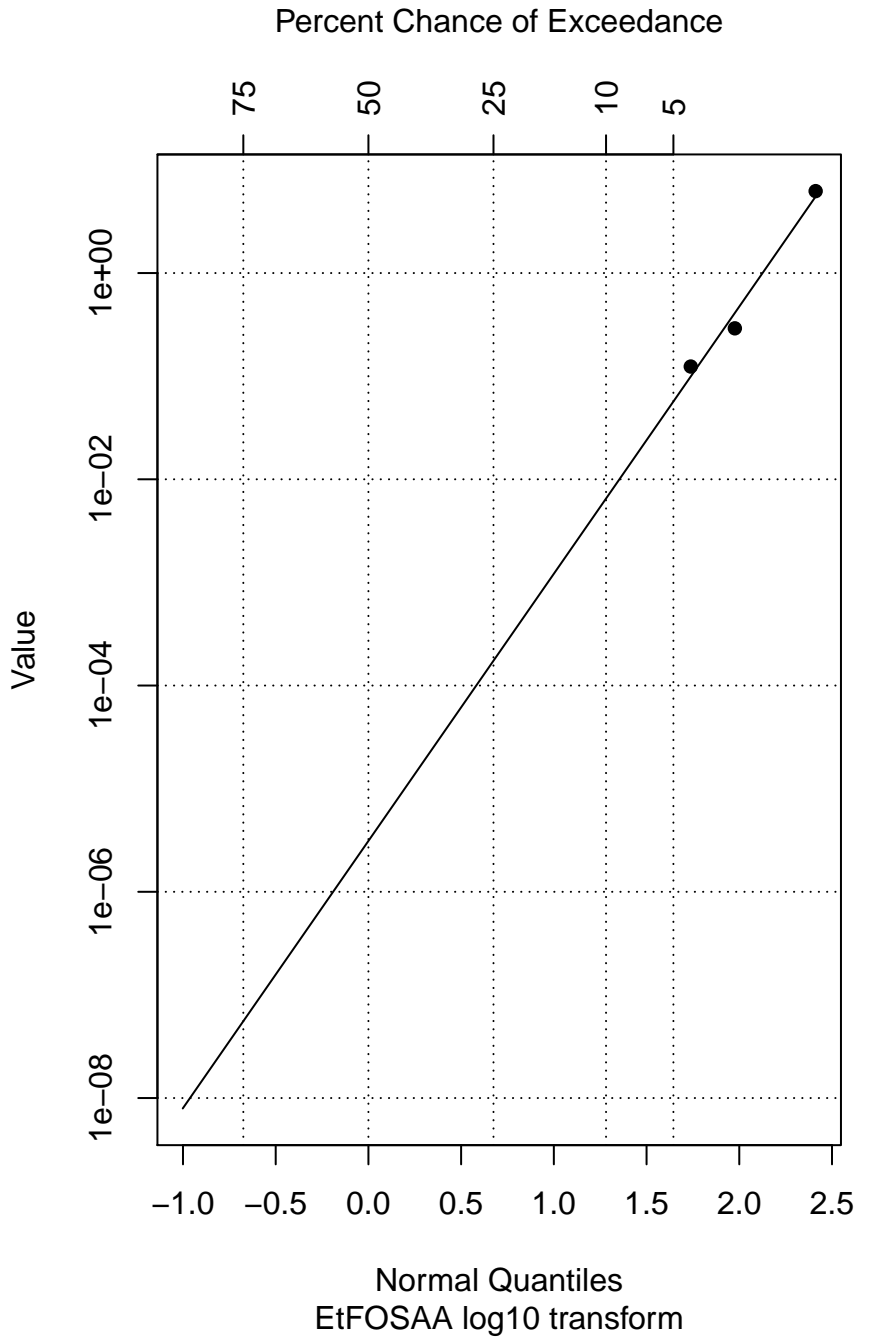
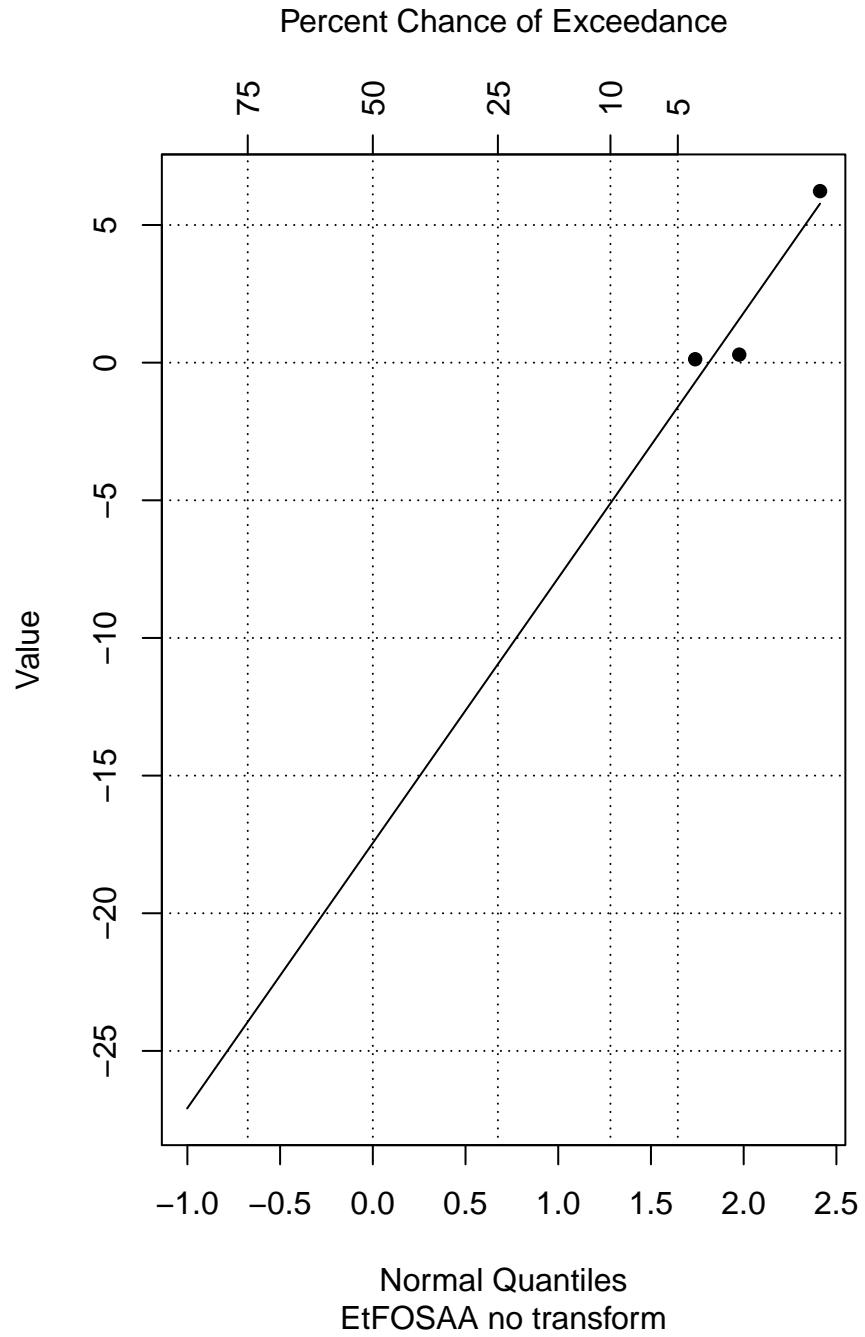












## **APPENDIX G**

### **Maine DEP Data Quality Review**

# APPENDIX G

## MAINE DEP DATA QUALITY REVIEW

**From:** Williams, Colin s  
**Sent:** Monday, February 14, 2022 8:09 PM  
**To:** Perkins, Kelly; Smith, Troy T; Feola, Athena; Leighton, Robert S  
**Cc:** Lynam, John; Eleftheriou, Victoria H; King, Molly; Kelly, Tracy  
**Subject:** RE: PFAS & PAH Data for PFAS Background Study

Hi Troy,

I reviewed the data and have the following comments:

L2164267 Method 8270D SIM

Sample L2164267-09D

- Anthracene should be flagged with a “J” qualifier due to RPD with the field duplicate. Bias is indeterminate.
- Fluoranthene should be flagged with a “J” qualifier due to RPD with the field duplicate. Bias is indeterminate.
- Fluorene should be flagged with a “J” qualifier due to RPD with the field duplicate. Bias is indeterminate.
- Phenanthrene should be flagged with a “J” qualifier due to RPD with the field duplicate. Bias is indeterminate.

Sample L2164267-10D

- Anthracene should be flagged with a “J” qualifier due to RPD with the primary sample. Bias is indeterminate.
- Fluoranthene should be flagged with a “J” qualifier due to RPD with the primary sample. Bias is indeterminate.
- Fluorene should be flagged with a “J” qualifier due to RPD with the primary sample. Bias is indeterminate.
- Phenanthrene should be flagged with a “J” qualifier due to RPD with the primary sample. Bias is indeterminate.

Sample L2164267-23

- All detects should be flagged with a “J” qualifier due to RPD with the field duplicate. Bias is indeterminate.

## Sample L2164267-24D

- All detects should be flagged with a “J” qualifier due to RPD with the primary sample. Bias is indeterminate.

## L2164267 Lloyd Kahn

## Sample L2164267-06

- TOC should be flagged with a “J” qualifier and considered biased low due to low recovery in the MS. Matrix interference is suspected.

## Sample L2164267-28

- TOC should be flagged with a “J” qualifier and considered biased low due to low recovery in the MS. Matrix interference is suspected.

## L2164327 Method 8270D SIM

## Sample L2164327-11

- Benzo(a)anthracene should be flagged with a “JB” qualifier and considered biased high due to presence in the blank.
- Benzo(b)fluoranthene should be flagged with a “JB” qualifier and considered biased high due to presence in the blank.
- Benzo(ghi)perylene should be flagged with a “U” qualifier and reported as the RL due to presence in the blank.
- Chrysene should be flagged with a “JB” qualifier and considered biased high due to presence in the blank.

## Sample L2164327-14

- Benzo(ghi)perylene should be flagged with a “JB” qualifier and considered biased high due to presence in the blank.

## Sample L2164327-22

- Benzo(b)fluoranthene should be flagged with a “U” qualifier and reported as the RL due to presence in the blank.
- Naphthalene should be flagged with a “UJ” qualifier and considered biased low due to low recovery in the LCS/LCSD.

## L2164327 Lloyd Kahn

## Sample L2164327-06

- TOC should be flagged with a “J” qualifier and considered biased low due to low recovery in the MS. Matrix interference is suspected.

Sample L2164327-07

- TOC should be flagged with a “J” qualifier and considered biased high due to high recovery in the MS. Matrix interference is suspected.

Sample L2164327-28

- TOC should be flagged with a “J” qualifier and considered biased low due to low recovery in the MS. Matrix interference is suspected.

L2166673 Method 8270D SIM

Sample L2166673-01

- Naphthalene should be flagged with a “JB” qualifier and considered biased high due to presence in the blank.

L2166673 Lloyd Kahn

Sample L2166673-01

- TOC should be flagged with a “J” qualifier due to RPD with the lab duplicate. Bias is indeterminate.

Let me know if you have any questions.

Colin S. Williams, Chemist I  
Bureau of Remediation and Waste Management  
Maine Department of Environmental Protection  
Phone: (207) 592-0850  
[www.maine.gov/dep](http://www.maine.gov/dep)

**From:** Perkins, Kelly  
**Sent:** Wednesday, February 9, 2022 1:07 PM  
**To:** Smith, Troy T; Feola, Athena; Leighton, Robert S; Williams, Colin s  
**Cc:** Lynam, John; Eleftheriou, Victoria H; King, Molly; Kelly, Tracy  
**Subject:** FW: PFAS & PAH Data for PFAS Background Study

Hi Troy,

I reviewed the PFAS results in the attached reports and have the following comments (Colin will be reviewing the PAH and TOC reports):

L2164267-01

- No validation qualifiers needed

L2164267-02

- No validation qualifiers needed

L2164267-03

- No validation qualifiers needed

L2164267-04

- No validation qualifiers needed

L2164267-05

- PFOA, PFNA and PFOS should be flagged with “J” qualifiers and results considered biased high due to isotope recovery
- NMeFOSAA and NEtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery

L2164267-06

- No validation qualifiers needed

L2164267-07

- PFHpA, PFOA and PFOS should be flagged with “J” qualifiers and results considered biased high due to isotope recovery

L2164267-08

- No validation qualifiers needed

L2164267-09

- No validation qualifiers needed

L2164267-10

- No validation qualifiers needed

L2164267-11

- PFHpA, PFOA, PFNA, PFOS and PFDA should be flagged with “J” qualifiers and results considered biased high due to isotope recovery
- NMeFOSAA should be flagged with a “R” qualifier and result considered unusable due to isotope recovery

L2164267-12

- No validation qualifiers needed

L2164267-13

- No validation qualifiers needed

L2164267-14

- No validation qualifiers needed

L2164267-15

- No validation qualifiers needed

L2164267-16

- No validation qualifiers needed

L2164267-17

- No validation qualifiers needed

L2164267-18

- No validation qualifiers needed

L2164267-19

- No validation qualifiers needed

L2164267-20

- No validation qualifiers needed

L2164267-21

- PFOA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance and isotope recovery
- PFBA, PFHxA, PFHpA and PFNA should be flagged with “J” qualifiers and results considered biased high due to isotope recovery
- 8:2-FTS should be flagged with a “UJ” qualifier and results considered biased low due to isotope recovery



## L2164267-22

- PFHxA and PFOA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance and isotope recovery
- PFOS should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- PFNA should be flagged with a “J” qualifier and result considered biased high due to isotope recovery
- 4:2-FTS, 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery

## L2164267-23

- 8:2-FTS should be flagged with a “UJ” qualifier and result considered biased low due to isotope recovery
- NMeFOSAA and NEtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery. They should also be flagged with the NRR code

## L2164267-23RE

- NEtFOSAA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- NMeFOSAA should be flagged with an “R” qualifier and result considered unusable due to isotope recovery

## L2164267-24

- NMeFOSAA and NEtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery. They should also be flagged with the NRR code

## L2164267-24RE

- NMeFOSAA and EtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery

## L2164267-25

- PFHpA and PFOA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance and isotope recovery
- PFBA should be flagged with a “J” qualifier and result considered biased high due to isotope recovery
- 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery

## L2164267-26

- PFOA and PFNA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance and isotope recovery

## L2164267-27

- PFOA, PFNA and PFOS should be flagged with “J” qualifiers and results considered biased high due to transition exceedance and isotope recovery
- PFBA, PFPeA, PFHxA and PFHpA should be flagged with “J” qualifiers and results considered biased high due to isotope recovery
- NMeFOSAA and NEtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery. They should also be flagged with the NRR code

## L2164267-27RE

- NMeFOSAA and NEtFOSAA should be flagged with “R” qualifiers and results considered unusable due to isotope recovery

## L2164267-28

- PFOA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- PFDA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance and isotope recovery
- 8:2-FTS should be flagged with a “UJ” qualifier and result considered biased low due to isotope recovery

## L2164267-29

- 4:2-FTS, 6:2-FTS, 8:2-FTS and NETFOSAA should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164267-30

- 4:2-FTS, 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164267-31

- 4:2-FTS and 6:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164267-32

- 4:2-FTS, 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164267-33

- 4:2-FTS, 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164267-34

- 4:2-FTS and 6:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination

## L2164327-01

- PFHxA, PFOA, PFDA and PFUnA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance
- 8:2-FTS should be flagged with a “UJ” qualifier and result considered biased low due to isotope recovery

## L2164327-02

- PFOA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- 8:2-FTS should be flagged with a “UJ” qualifier and result considered biased low due to isotope recovery

## L2164327-03

- No validation qualifiers needed

## L2164327-04

- 8:2-FTS should be flagged with a “UJ” qualifier and result considered biased low due to isotope recovery

## L2164327-06

- PFUnA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- PFTA should be flagged with a “JB” qualifier and result considered biased high due to method blank contamination
- PFHxDA should be flagged with a “JB” qualifier and result considered biased high due to transition exceedance and method blank contamination

## L2164327-07

- PFHxDA should be flagged with a “JB” qualifier and result considered biased high due to transition exceedance and method blank contamination
- PFDA should be flagged with a “J” qualifier and result considered biased high due to isotope recovery

## L2164327-08

- PFDA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance and isotope recovery
- PFHxA, PFHpA and PFOA should be flagged with “J” qualifiers and results considered biased high due to isotope recovery
- 6:2-FTS and 8:2-FTS should be flagged with “UJ” qualifiers and results considered biased low due to isotope recovery
- PFTA and PFHxDA should be flagged with “JB” qualifiers and results considered biased high due to method blank contamination

## L2164327-09

- PFOA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance

## L2164327-10

- No validation qualifiers needed

## L2164327-11

- No validation qualifiers needed

## L2164327-12

- PFUnA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance

## L2164327-13

- PFNA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance and isotope recovery
- PFBA should be flagged with a “J” qualifier and result considered biased high due to isotope recovery

## L2164327-14

- No validation qualifiers needed

## L2164327-15

- PFOA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance and isotope recovery
- PFBA, PFPeA, PFHxA, PFHpA and PFNA should be flagged with “J” qualifiers and results considered biased high due to isotope recovery

L2164327-16

- PFOA and PFDA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance

L2164327-17

- PFHpA, PFOA and PFUnA should be flagged with “J” qualifiers and results considered biased high due to transition exceedance

L2164327-18

- PFTA should be flagged with a “JB” qualifier and result considered biased high due to transition exceedance and method blank contamination

L2164327-19

- PFPeA and PFTA should be flagged with “JB” qualifiers and results considered biased high due to method blank contamination

L2164327-20

- No validation qualifiers needed

L2164327-21

- PFPeA and PFTA should be flagged with “JB” qualifiers and results considered biased high due to method blank contamination

L2164327-23

- PFPeA should be flagged with a “J” qualifier and result considered biased low due to holding time exceedance
- PFTA should be flagged with a “JB” qualifier with bias undetermined due to method blank contamination and holding time exceedance
- All the rest of the compounds should be flagged with “UJ” qualifiers and results considered biased low due to holding time exceedance

L2164327-24

- PFPeA should be flagged with a “J” qualifier and result considered biased low due to holding time exceedance
- PFTA should be flagged with a “JB” qualifier with bias undetermined due to method blank contamination and holding time exceedance
- All the rest of the compounds should be flagged with “UJ” qualifiers and results considered biased low due to holding time exceedance

L2166673-01

- PFUnA should be flagged with a “J” qualifier and result considered biased high due to transition exceedance
- PFDA should be flagged with a “J” qualifier and result considered biased high due to isotope recovery

Athena- please add the above qualifiers and upload to EGAD after you receive the validation from Colin.

Please let me know if you have any questions.

Kelly

**From:** Smith, Troy T  
**Sent:** Thursday, January 06, 2022 1:25 PM  
**To:** Perkins, Kelly; Leighton, Robert S  
**Cc:** Lynam, John  
**Subject:** PFAS & PAH Data for PFAS Background Study

Kelly & Rob,  
Attached are the rest of the background soils data.  
Please review and upload to EGAD.  
As discussed before, these are no part of a specific site, they are part of the statewide background study.

Let me know if you have any questions.

Thanks,  
Troy

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