FINAL TEST REPORT
PFAS EMISSIONS MEASUREMENT METHODS DEVELOPMENT AND EMISSIONS CHARACTERIZATION STUDY AT NATIONAL RESPONSE CORPORATION ALASKA, LLC AFFF CONTAMINATED SOIL THERMAL TREATMENT FACILITY

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
31/07/2019	SERDP Final Report	

4. TITLE AND SUBTITLE

Analysis of Fate of PFAS during Incineration: PFAS EMISSIONS MEASUREMENT METHODS DEVELOPMENT AND EMISSIONS CHARACTERIZATION STUDY AT NATIONAL RESPONSE CORPORATION ALASKA, LLC AFFF CONTAMINATED SOIL THERMAL TREATMENT FACILITY

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
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5d. PROJECT NUMBER
ER19-1408

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. EPA
National Risk Management Research Laboratory, Air and Energy Management Division, Office of Research and Development
109 T.W. Alexander Drive (E343-04)
Research Triangle Park, NC 27711

8. PERFORMING ORGANIZATION REPORT NUMBER
ER19-1408

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Strategic Environmental Research and Development Program (SERDP)
4800 Mark Center Drive, Suite 16F16
Alexandria, VA 22350-3605

10. SPONSOR/MONITOR'S ACRONYM(S)
SERDP

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
ER19-1408

12. DISTRIBUTION/AVAILABILITY STATEMENT
DISTRIBUTION STATEMENT A. Approved for public release: distribution unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT
This study successfully demonstrated the application of PSS to indicate overall quantitative measurement performance for targeted PFAS measurements for the modified EPA Method 0010 sampling train and associated analyses. A minimum PSS recovery of 70% and a maximum of 130% is typically required for EPA's isotope dilution emissions measurement methods. PSS recoveries averaged 100.3% and 70.3% for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) respectively. Moreover, there was no evidence of the PSS compounds migrating from the XAD-2 to the impingers during sampling, even in an extremely high moisture environment. It is because of these results EPA is able to proceed with the preparation of a formal test method for quantitative, targeted PFAS emissions measurements. This method is now identified as DRAFT Other Test Method (OTM) 45, a candidate EPA Test Method recommended for measurement of targeted PFAS compounds from stationary sources.

15. SUBJECT TERMS
PFAS, Incineration, Contaminated Soil Thermal Treatment Facility

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			Brian Gullett
UNCLASS	UNCLASS	UNCLASS	UNCLASS	1192	**19b. TELEPHONE NUMBER** *(Include area code)* 919-541-1534

EXECUTIVE SUMMARY

A joint US Environmental Protection Agency (EPA) – Office of Research and Development (ORD) / Department of Defense (DoD) – Strategic Environmental Research and Development Program (SERDP) emissions field test was conducted at the National Response Corporation's (NRC's) Moose Creek Facility (MCF) soil thermal treatment facility, located in North Pole, Alaska. The purpose of this test program was to field evaluate the performance of candidate per- and polyfluoroalkyl substances (PFAS) emissions test methods in various stages of EPA development and use these tests methods to comprehensively characterize the emissions from aqueous film forming foam (AFFF) contaminated soil thermal treatment. Specifically, the quantitative performance of the EPA Method 0010 sampling train, modified for the collection and recovery of polar PFAS compounds and analyzed by isotope-dilution (ID) mass spectrometry for specific targeted PFAS compounds (e.g., EPA Method 537). The field evaluation included the first ever use of pre-sampling surrogates (PSS), isotopically labelled PFAS compounds added to sampling media prior to sampling, and quantitatively analyzed in the identical manner as target (native) PFAS compounds to serve as quantitative indicators of overall measurement quality. A modified EPA Method 18 sampling train was used to evaluate a potential approach for measuring Total Organic Fluorine. SUMMA canisters, typically used for ambient volatile organic compound (VOC) sampling, were used to collect whole air samples for volatile, nonpolar compounds. Triplicate emissions samples for each sampling approach were collected at the scrubber outlet sampling location over the course of three (3) days while thermally treating AFFF contaminated soil. Ancillary samples, including soil samples (treated and pretreated soil), baghouse dust, and water (scrubber) were also collected for quantitative targeted PFAS compounds analysis.

This study successfully demonstrated the application of PSS to indicate overall quantitative measurement performance for targeted PFAS measurements for the modified EPA Method 0010 sampling train and associated analyses. A minimum PSS recovery of 70% and a maximum of 130% is typically required for EPA's isotope dilution emissions measurement methods. PSS recoveries averaged 100.3% and 70.3% for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) respectively. Moreover, there was no evidence of the PSS compounds migrating from the XAD-2 to the impingers during sampling, even in an extremely high moisture environment. It is because of these results EPA is able to proceed with the preparation of a formal test method for quantitative, targeted PFAS emissions measurements. This method is now identified as DRAFT Other Test Method (OTM) 45, a candidate EPA Test Method recommended for measurement of targeted PFAS compounds from stationary sources.

The modified Method 0010 sampling train combined with the associated sample train fraction analytical preparation and targeted isotope dilution analyses reporting limits (RL) and method detection limits (MDLs) were used to calculate estimated in-stack measurement method RLs and MDLs for individual PFAS compounds. These estimated in-stack measurement limits serve to indicate the excellent sensitivity of the intended method and suitability to conduct quality DRE testing determinations.

The Method 0010 sampling train nontargeted analyses were not performed at this time. As a result, the comprehensive PIC characterization is also not available. The results of the nontargeted analyses, including characterization of PICs, will be the subject of a supplement to this report.

The inability to representatively characterize the PFAS levels in the AFFF contaminated soil was a complicating factor. Individual PFAS levels on the order of 1000 µg/kg had been observed by NRC and were expected. From ORD's single, pre-treatment soil sample, the highest PFAS concentration measured for any compound was 1.46 µg/kg for PFOS (i.e., all the remaining that were detected were estimated concentrations between the MDL and RL). It is suspected the relatively low AFFF-contaminated feed soil levels contributed to the result that all emissions measurements were either non-detect or above MDLs, but below RLs. However, even with the relatively low AFFF-contaminated feed soil levels measured by ORD, the targeted PFAS measurements for the modified Method 0010 sampling approach were sufficiently sensitive to determine a PFOS DRE of 99.9%. The destruction and removal of PFOS or other targeted compounds is not an indication of the presence or absence of PFAS products of incomplete combustion. Regardless of the pre-treatment AFFF-contaminated feed soil PFAS levels, all post-treatment soil sample results, representing all soil treated during the study, met Alaska Department of Environmental Conservation (ADEC) clean-up levels (CULs) for PFAS compounds.

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ACRONYMS AND ABBREVIATIONS

4:2 FTOH	3,3,4,4,5,5,6,6,6-Nonafluoro-1-hexanol
6:2 FTOH	3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluoro-1-octanol
°F	degrees Fahrenheit
°C	degrees Celsius
%	percent
AB	after burner
ADEC	Alaska Department of Environmental Conservation
AFFF	aqueous film forming foam
AST	Alaska Source Testing
BH	Back half
CEMS	continuous emissions monitoring system
CO2	carbon dioxide
CO	carbon monoxide
CULs	clean-up levels
DI	Deionized
DoD	Department of Defense
DRE	destruction and removal efficiency
E1	heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether
E2	2H-Perfluoro-5-methyl-3,6-dioxanonane
EPA	United States Environmental Protection Agency
FH	front half
FTOHs	fluorotelomer alcohols
GC-MS	gas chromatography-mass spectrometry
HF	hydrogen fluoride
HFP	1,1,2,3,3,3-hexafluoro-1-propene
IC	ion chromatography
ID	isotope dilution
IS	internal standard
JT	Jacobs Technology
kg	kilogram(s)
LC/MS	liquid chromatography/mass spectrometry
Lpm	liters per minute
MCF	Moose Creek Facility
MDL	method detection limit
mg/kg	milligrams per kilogram
MM5	Modified Method 5
ng/L	nanogram per liter
NRC	National Response Corporation
NTA	nontargeted analysis
O_2	oxygen
OAQPS	Office of Air Quality Planning and Standards
OD	outside diameter

OIT	Organic Incineration Technology Incorporated
ORD	Office of Research and Development
OTM	other test method
PFAA	perfluoroalkyl acids
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutane sulfonate
PFC	perfluorinated compound
PFCA	perfluoroalkyl carboxylic acids
PFHxS	perfluorohexane sulfonate
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PFPeA	perfluoropentanoic acid
PFSA	perfluoroalkyl sulfonic acids
PI	principal investigator
PIC	product(s) of incomplete combustion
POHC	principal organic hazardous constituent
ppb	parts per billion
ppm	parts per million
PSS	pre-sampling surrogate
QA	quality assurance
QC	quality control
RL	reporting limit
SCC	secondary combustion chamber
SCFM	standard cubic feet per minute
SPE	solid-phase extraction
SERDP	Strategic Environmental Research and Development Program
SS	stainless steel
SVOC	semi-volatile organic compound(s)
TA	Test America
TD	technology demonstration
TF	total fluorine
TFE	tetrafluoroethylene
TOF	total organic fluorine
tph	tons per hour
µg/kg	microgram per kilogram
$\mu g/m^3$	microgram per cubic meter
VOC	volatile organic compound

ACKNOWLEDGEMENTS

EPA would like to acknowledge the valuable contributions of the multiple organizations that contributed to the success of this study. National Resource Corporation (now owned by US Ecology, Inc) for the timely and comprehensive facility preparations and availability. Hedgerow Hill Corporation for overall project coordination and continued communications to provide additional facility knowledge and process information, as needed. Alaska Source Testing for the quality testing provided under difficult testing conditions. Test America, particularly William Anderson, for the technical expertise necessary to help design and implement the modified sampling and analytical procedures. EPA would especially like to acknowledge the SERDP program and their critical contributions to support EPA's PFAS emissions methods development research.

1.0 BACKGROUND AND OBJECTIVES

1.1 Background

The thermal treatment of soils contaminated with per- and polyfluoroalkyl substances (PFAS), primarily aqueous film forming foams (AFFF), is a treatment technology option of current interest to the US Environmental Protection Agency (EPA) and Department of Defense (DoD). Thermal treatment is intended to destroy the entire PFAS molecule, which typically contains an ionic "tail" and fluoroalkyl "tail". The temperatures required to cleave the ionic functional group from the fluoroalkyl group are relatively low, typically well less than 500 °C (Wang, et al, 2015). As a result, the PFAS compound "loses its identity" and can no longer be measured as the original PFAS compound. However, the remaining fluoroalkyl group is comprised of multiple carbon-fluorine bonds require significantly greater temperatures, at least 1000 °C and potentially as high as 1400 °C (Tsang, et al, 1998), to completely destroy all carbon-fluorine bonds. The potential for products of incomplete combustion (PIC) formation is the primary concern associated with the thermal treatment of PFAS. The remaining fluorocarbon backbone group or backbone fragments, including carbon-fluorine and fluorine "radicals", may recombine to form other PFAS compounds of concern (Tsang, et al, 1998). Research is needed to understand the thermal treatment behavior of PFAS compounds, including the potential for PIC formation. Conducting comprehensive emissions characterizations is a desired approach to understanding this behavior.

The US EPA's Office of Research and Development (ORD), in collaboration with the DoD Strategic Environmental Research and Development Program (SERDP) and National Response Corporation (NRC) Alaska, LLC formerly Organic Incineration Technology (OIT) Incorporated, conducted novel research investigating the emissions from the thermal treatment of soils contaminated with PFAS, primarily AFFF. This research took place at NRC's Moose Creek Facility (MCF) located in North Pole, Alaska (i.e., near Fairbanks) in October 2019.

This project is an emissions measurement methods development research study, not a conventional emissions test, nor formal technology demonstration (TD) test. The project focused on the deployment and evaluation of candidate PFAS emission measurement and characterization methodologies. As a result, this project is a scoping study, conducted under difficult field conditions, involving the application of methods – sampling and analytical – in various phases of development within ORD. These methods and approaches are proposed and conceptual in nature. They are not established methods or procedures, and are subject to changes, modifications, and alternatives as identified throughout the research process. The purpose of this study is to field demonstrate the readiness of the current measurement approaches, including their appropriateness for the characterization of thermal treatment process emissions, and prepare for a second, more refined and comprehensive TD study to potentially follow.

1.2 Study Objectives

The objectives of this research were primarily two-fold:

1. To evaluate the suitability and performance of candidate, PFAS-specific emissions measurement methods and approaches as they apply to thermal treatment sources.

   The primary objective was to assess the quantitative measurement performance of the modified SW- 846 Method 0010 - Modified Method 5 (MM5) Train (i.e., modified Method 0010) for PFAS compounds. This train, with method-specific sampling and analytical modifications, was being evaluated by EPA-ORD as a potential formal EPA method for the quantitative measurement of targeted PFAS emissions from sources, including incineration and combustion. This project offered an opportunity to deploy and evaluate the approach in an intended environment for use. The testing provides the first ever data on quantitative measurement performance and distribution of select PFAS compounds, including the use of pre-sampling surrogate (PSS) PFAS compounds.

   A secondary objective was to evaluate a proof-of-concept Total Organic Fluorine (TOF) measurement, which is an approach to quantify all PFAS compounds present as a group or class of compounds.

2. To conduct a comprehensive PFAS emissions characterization from a representative thermal treatment process to improve the understanding of the thermal behavior of PFAS compounds with a primary focus on the potential for PIC formation. This approach includes the use of specialized nontargeted analyses (NTA) to identify and characterize volatile/semivolatile/non-volatile polar and non-polar PFAS and PFAS-like compounds in thermal treatment emissions, as comprehensively as possible.
   The potential for PIC formation is the primary concern associated with the thermal treatment of PFAS. PFAS compounds are unique in that they possess dual thermal stability characteristics. The polar functional tail of the PFAS compound is highly thermally labile and will “break” at relatively low temperatures leaving the remaining fluorocarbon backbone, which is much more difficult to destroy, requiring much higher temperatures. The remaining fluorocarbon backbone or backbone fragments, including carbon-fluorine and fluorine “radicals”, may recombine to form other PFAS compounds of concern. The measurement methods deployed were intended to be able to identify these potential compounds. Development and demonstration of this emission measurement and characterization approach is critical to future PFAS thermal treatment research for multiple source categories.

Overall, the results of this project are being used to:

1. Determine the status of PFAS emission measurement methodologies;
2. Provide insight into further methods development needs and potential approaches;
3. Generate emissions data to assist in the development of an empirical understanding of PFAS incineration behavior, including the potential for PIC formation; and

4. Provide insight for further refined emissions testing to improve the understanding of PFAS thermal treatment behavior.

Results from this study will not make definitive statements or draw definitive conclusions, rather assess the state of the science regarding measurement capabilities as well as our understanding of PFAS thermal treatment behavior. The primary outcome of this study will inform and refine future research, including a potential future thermal treatment TD test and emissions characterization study at the MCF.

2.0 Facility Description

NRC's MCF is located 24 miles southeast of Fairbanks, Alaska and is situated in the Tanana River valley, one mile from Eielson Air Force Base at 4822 Give-A-Way Street, North Pole, Alaska.

The Thermal Treatment System's primary components are listed below and depicted in Figure 1:

- Rotary Combustion Kiln
- Air Mixing Section
- Secondary Combustion Chamber
- Cooling (Quench) Tower
- Two Bag Houses
- Induction Fan
- Wet Scrubber
- Emission Stack

Thermal processing begins with the injection of the waste material to the rotary kiln. Once in the kiln, the contaminated material is exposed to temperatures of 1200 – 1500ºF. The gas vapors and particulate are drawn from the kiln to the Air Mixing and Secondary Combustion Chamber (SCC) and exposed to temperatures from 1600 – 2000ºF, where oxidation occurs. The superheated gases and airborne particulate then enter the Cooling/Quench Tower, where the gases and particulate are exposed to an atomized spray of water, reducing the gas stream and particulate temperature from approximately 1800 – 350ºF. The cooled particulate is removed from the gas stream while moving through the baghouse. Exhaust gasses then enter a quench duct where they are saturated and further cooled before entering the scrubber and exposed to a caustic solution to remove hydrofluoric acid (HF) and then finally exhausted through a stack positioned on top of the scrubber.

Sample access was gained via platform through two, four-inch sample ports on the stack. The sample ports were located approximately 22 feet downstream from the nearest flow disturbance and approximately 30 feet upstream of the stack exit.

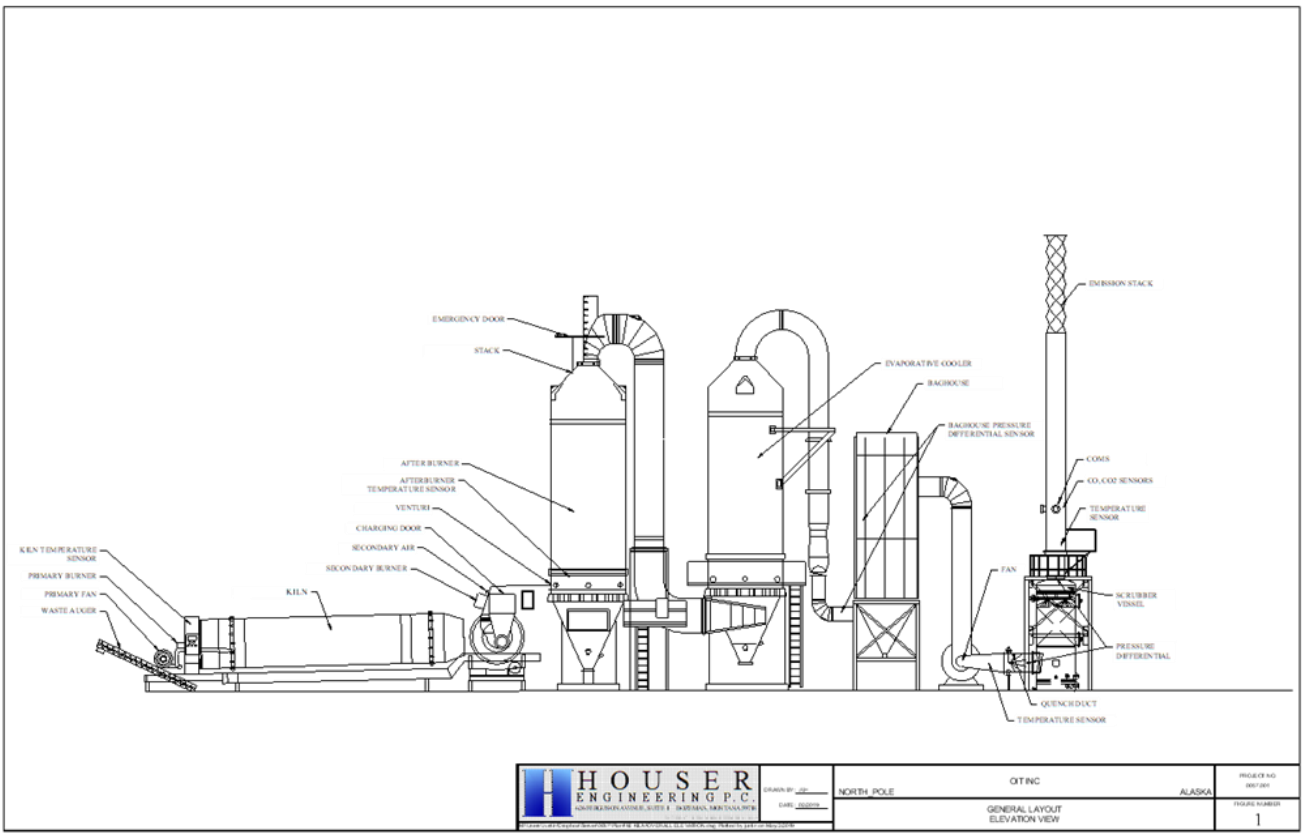

Figure 2-1. NRC Thermal Treatment Facility

3.0 Technical Approach

The technical approach was to conduct emissions testing using multiple emissions sampling approaches, while NRC operated their thermal treatment facility using a representative PFAS contaminated soil. The emissions testing consisted of the collection of replicate (i.e., triplicate in most cases) emissions samples using multiple methodologies and sampling trains. The sampling approaches were intended to collect volatile/semivolatile/nonvolatile polar and nonpolar PFAS and PFAS-like compounds. The resulting samples were then to be analyzed qualitatively by multiple approaches with a primary focus on NTA to tentatively identify PICs. Quantitative, targeted PFAS analyses were performed and included isotopically labeled PFAS as PSS to assess quantitative measurement quality. Ancillary sampling and analyses for untreated and treated soil plus other process media (e.g., scrubber waters) was also performed.

NRC was responsible for the operation of the thermal treatment facility, including their own characterization of PFAS contaminated soil used during the tests. EPA-ORD solicited from NRC available process monitoring measurements such as primary and secondary combustion chamber temperatures, soil and fuel feed rates, stack flows, and any other ancillary process operating information to aid in the interpretation of emissions study results.

EPA-ORD was responsible for the sampling and analytical services and contracted with Alaska Source Testing, LLC (AST) through the EPA's Jacobs Technology (JT) contract. AST provided the on-site emissions testing services as well as testing interactions between NRC and EPA-ORD. Through the JT contract, EPA-ORD also contracted with Test America (TA) to perform the modified Method 0010 sampling train sample preparation (e.g., sampling media, XAD-2 spiking, solvent extractions) and targeted PFAS analyses. EPA-ORD researchers performed the SUMMA canister sampling and analyses.

3.1 Sampling Approach

3.1.1 Modified Method 0010

The modified Method 0010 sampling train was used to collect polar and nonpolar, semivolatile and nonvolatile PFAS compounds for targeted and NTA. The modified Method 0010 sampling train is depicted in Figure 3-1. The primary modifications to the sampling method include:

- An additional XAD-2 resin trap (breakthrough) positioned after the third deionized water impinger and before the desiccant impinger. This extra trap served as an overall indicator of PFAS breakthrough.
- The use of a methanol/ammonium hydroxide solution as the glassware rinsing solution for the front half (FH), back half (BH), and impinger sample fractions.
- All sample fractions recovered and stored separately, including the impinger glassware rinsate sample. This allowed separate analysis of the individual fractions to assess distribution of PFAS compounds through the sampling train.
- Both XAD-2 traps spiked with C13 isotopically labelled perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) prior to sampling to serve as PSS.
- Multiple solvent extraction approaches for recovery and separation of polar and nonpolar PFAS compounds.

A total of six (6) modified Method 0010 sampling trains were collected at the outlet of the thermal treatment scrubber. Three (3) of the trains (Runs 1, 3, and 5) were designated for targeted and nontargeted, polar semivolatile and nonvolatile PFAS compounds, including PFOA and PFOS PSS recovery and distribution determinations, and are the subject of this report. Three (3) trains (Runs 2, 4, and 6) were designated for nontargeted, nonpolar semivolatile and nonvolatile analyses and are not reported or discussed here. A $\geq 3m^3$ collection sample volume was targeted and achieved. Recovery of the modified Method 0010 sampling train sample components followed a procedure established by TA. Field and trip/reagent blanks were also collected.

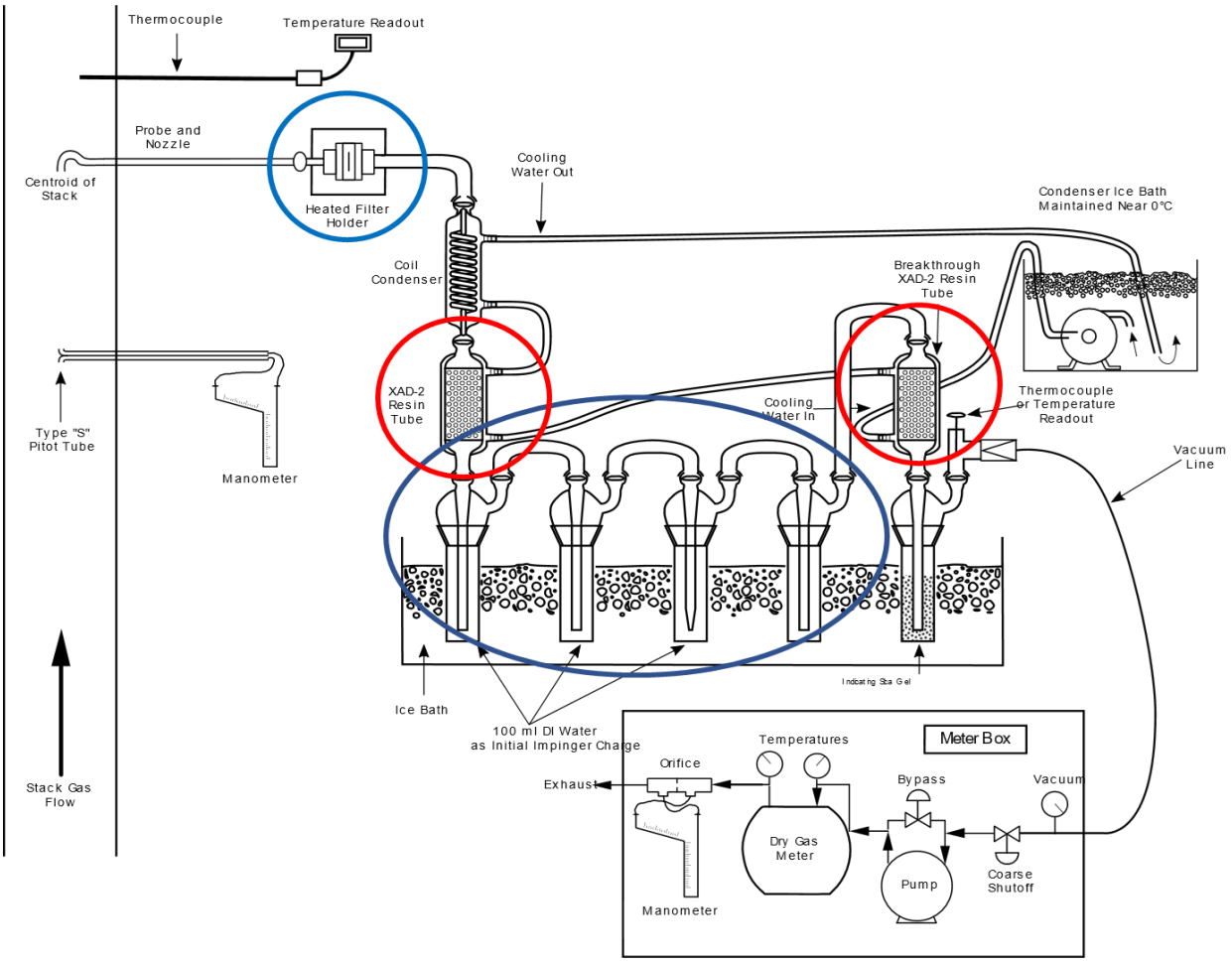

Figure 3-1. Modified Method 0010 Sampling Train

3.1.2 Modified Method 18

A modified Method 18 PFAS sampling train, a sampling train developed by TA, was adapted to collect polar, volatile PFAS compounds for conceptual TOF analyses. While this procedure has not been applied to incineration sources and was intended for chemical manufacturing sources, the approach was worth evaluating. The train was composed of six (6) impingers containing methanol chilled in a dry ice-methanol bath where the methanol temperature was reduced to approximately -78°C to capture polar, volatile PFAS. To accommodate the after-scrubber sampling location and the high moisture content, two (2) additional water knock-out impingers were positioned outside the methanol ice bath and in their own water ice bath, resulting in a total of eight (8) impingers for inorganic fluorine (assumed to be HF) and total fluorine (TF) analysis. A total of three (3) trains were collected at the scrubber outlet. A nominal $2m^3$ sample volume was collected. The modified Method 18 sampling train, without the moisture knock-out impingers is depicted in Figure 3-2. Field and trip/reagent blanks were also collected.

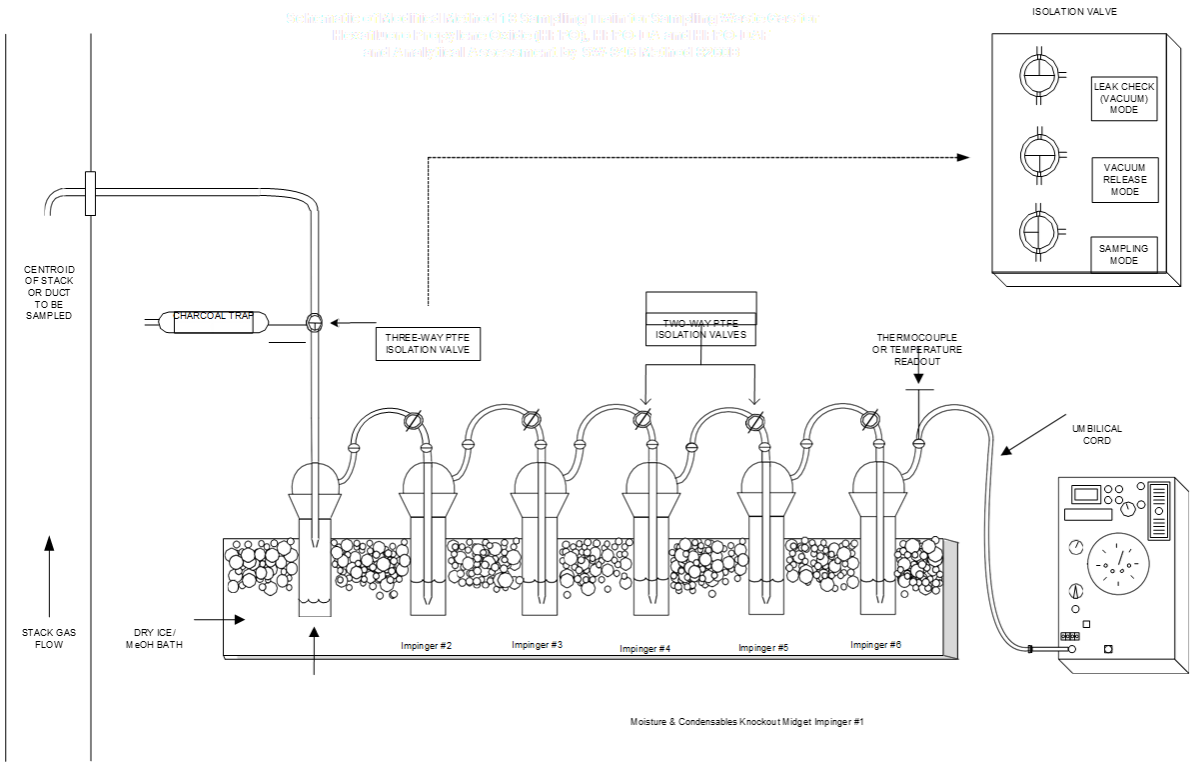

Figure 3-2. Modified Method 18 Sampling Train

3.1.3 EPA-ORD's SUMMA Canister Method

EPA-ORD's SUMMA canister sampling method was used to collect nonpolar, volatile PFAS compounds for targeted PFAS analyses. Samples were collected from a sampling manifold where the process emissions are extracted from the stack with a dedicated sampling system. The sampling system consists of an unheated ¼" outside diameter (OD) stainless-steel (SS) tubing from the probe to an impinger, ice bath moisture knock-out system, and from the ice bath moisture knock out system to the sampling manifold. A series for impingers were used to condense the considerable stack moisture. The emissions sample was withdrawn from the stack with a bypass vacuum pump at a nominal sample flow of 4 – 6 Lpm. The sampling system is depicted in Figure 3-3. The SUMMA sample was withdrawn from the sampling manifold which is on the vacuum side of the sample pump. A critical orifice (~40cc/min) controls sample flow rate into the vacuum evacuated SUMMA canister. A total of three (3) SUMMA canister source samples were collected. Each nominal 4L whole air sample was collected over a 2-hour sampling period. An ambient sample and field blank were also collected. EPA-ORD provided the sampling system and SUMMA canisters, and the EPA Principal Investigator (PI) was responsible for sample collection. Field and trip blanks were also collected.

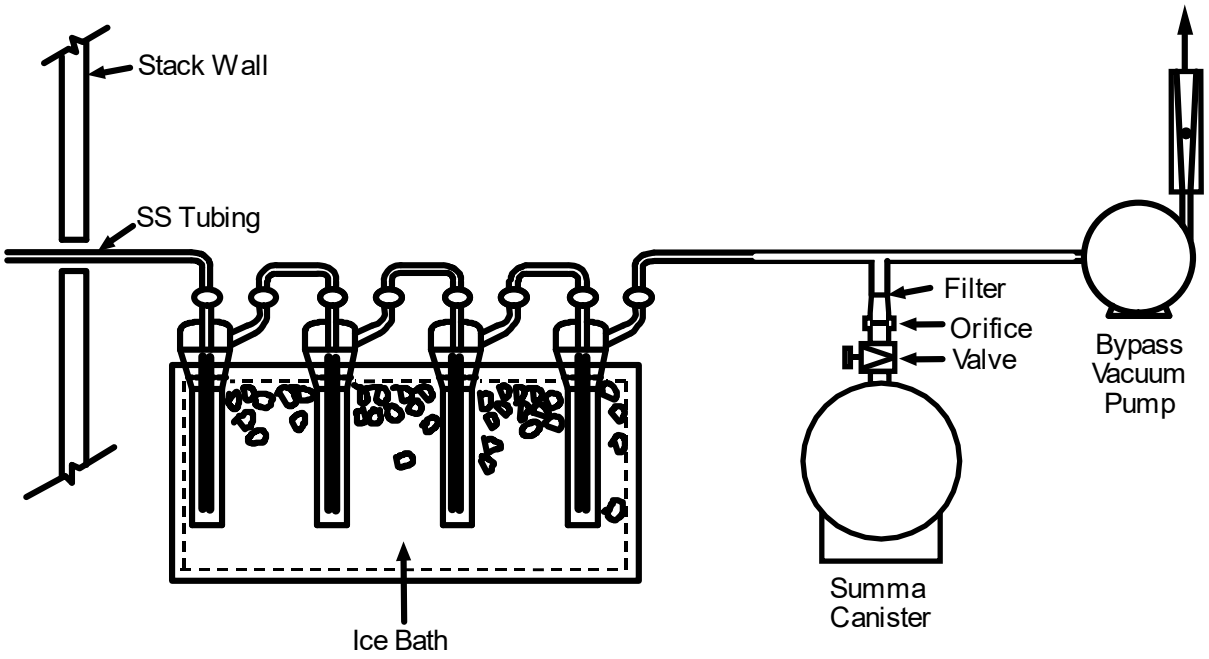

Figure 3-3. SUMMA Canister Sampling Train

3.1.4 Ancillary Soil and Water Samples

Ancillary soil and water samples were collected to provide supplemental information. Soil and water samples included untreated soil, treated soil, baghouse particulate, scrubber water, and scrubber make-up water. Soil and water samples were collected by an independent contractor provided by AST. Although no formal sampling plan was available, EPA-ORD Quality Assurance (QA) staff were on-site during testing to independently observe and document sample collection activities.

3.2 Analytical Approach

3.2.1 Modified Method 0010 Sampling Train Sample Preparation and Analysis

The modified Method 0010 sampling train was used to collect polar and nonpolar, semivolatile and nonvolatile PFAS compounds for targeted and nontargeted PFAS analyses. Multiple analytical approaches, each with multiple analytical objectives, required multiple sample treatments to prepare them for each intended analytical approach. These approaches included differing and multiple sample extraction approaches and solvents, and the analysis of individual sample fractions to determine the partitioning of PFAS within the modified Method 0010 sampling train collection media. TA performed all sample preparation activities.

Three (3) of the Method 0010 trains were designated for polar, semivolatile, and nonvolatile targeted and nontargeted PFAS compounds analyses (Runs 1, 3, and 5). These trains were prepared using TA's established sample preparatory approach where the three (3) solid fractions (i.e., filter and front and back XAD-2 traps) were extracted with a methanol/ammonium hydroxide solution and the deionized (DI) water impinger samples were extracted with the conventional solid-phase extraction (SPE) cartridge.. The methanol/ammonium hydroxide

impinger rinse was treated as a separate sample fraction. Each fraction was spiked with the appropriate isotopically labelled internal standard (IS) prior to extraction. The modified Method 0010 sampling train sample preparation resulted in five (5) separate methanol/ammonium hydroxide extract sample fractions for. Combined, these sample fractions represent the total polar, semivolatile and nonvolatile PFAS compounds collected. All quality control (QC) samples, including field blanks were also prepared by this approach.

All modified Method 0010 sampling train samples were analyzed by TA who performed all targeted PFAS analyses following their established procedures. In summary, targeted PFAS were quantified by liquid chromatography/triple quadrupole mass spectrometry (LC/MS). Analyses were conducted by isotope dilution (ID) where an isotopically labelled IS was used to quantify each PFAS homologue. Not all PFAS targets have a companion isotopologue and some PFAS targets were quantified by an isotopically labelled IS of similar, but not identical structure. The list of PFAS compounds targeted for analysis by TA is presented in Table 3-1.

TA's target analyte list was expanded specifically to include ID analysis of the pre-sampling surrogates. PFOA and PFOS are the only PFAS compounds with multiple C13 labelled isotopologues and were chosen as PSS for this reason. The limited availability of multiple labelled PFAS isotopologues limits the number and type of additional PFAS compounds that can be considered for use as pre-sampling surrogates. The inclusion of the C13 labelled PFOA and PFOS PSS isotopologues is meant as a representative indicator of quantitative capture and measurement as the PSS are treated and analyzed in the identical manner as the targeted PFAS compounds.

Targeted PFAS analyses were performed on all modified Method 0010 sampling train prepared fractions. Multiple laboratory blanks and control samples were included as part of the sample analyses and were critical in assessing data quality. TA's comprehensive analytical data reports are appended to this study report.

Table 3-1. List of PFAS Compounds Targeted for Quantitation by Test America.

Analyte Description	CAS Number
Perfluorohexanoic acid (PFHxA)	307-24-4
Perfluorobutanoic acid (PFBA)	375-22-4
Perfluoroheptanoic acid (PFHpA)	375-85-9
Perfluoropentanoic acid (PFPeA)	2706-90-3
Perfluorooctanoic acid (PFOA)	335-67-1
Perfluorononanoic acid (PFNA)	375-95-1
Perfluorodecanoic acid (PFDA)	335-76-2
Perfluoroundecanoic acid (PFUnA)	2058-94-8
Perfluorododecanoic acid (PFDoA)	307-55-1
Perfluorotridecanoic acid (PFTriA)	72629-94-8
Perfluorotetradecanoic acid (PFTeA)	376-06-7
Perfluorobutanesulfonic acid (PFBS)	375-73-5
Perfluorohexanesulfonic acid (PFHxS)	355-46-4
Perfluoro-n-hexadecanoic acid (PFHxDA)	67905-19-5
Perfluorooctanesulfonic acid (PFOS)	1763-23-1
Perfluoro-n-octadecanoic acid (PFODA)	16517-11-6
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8
Perfluorodecanesulfonic acid (PFDS)	335-77-3
Perfluorooctanesulfonamide (FOSA)	754-91-6
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4
Perfluorononanesulfonic acid (PFNS)	68259-12-1
Total PFOA and PFOS	STL02406
4:2 FTS	757124-72-4
6:2 FTS	27619-97-2
8:2 FTS	39108-34-4
10:2 FTS	120226-60-0
Perfluorododecanesulfonic acid (PFDoS)	79780-39-5
ADONA	958445-44-8
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	756426-58-1
HFPO-DA (GenX)	13252-13-6
F-53B Minor	763051-92-9
F-53B	STL02459
NaDONA	STL02547
DONA	919005-14-4

3.2.2 Modified Method 18 for Inorganic Fluorine and Total Fluorine

The modified Method 18 samples were analyzed by TA for both inorganic fluorine (assumed to be HF) and TF. Both measurements rely on fluoride ion measurement by ion chromatography (IC) following SW-846 Method 9056. Each impinger fraction, H_20 or MeOH, was analyzed twice. The first analysis determines the inorganic fluorine, assumed to be HF. The second analysis follows oxidation of the sample. The sample was oxidized by combustion in a bomb containing oxygen under pressure (SW-846 Method 5050). The fluorine was absorbed in a sodium carbonate/sodium bicarbonate solution and then analyzed by IC. This TF measurement represents both inorganic and organic fluorine. The assumption is the TF measurement minus the inorganic measurement represents TOF. Multiple laboratory blanks and control samples were included as part of the sample analyses. TA's comprehensive analytical data reports are appended to this study report.

3.2.3 SUMMA Canisters for Targeted Volatile Organic Compounds

Targeted gas chromatography-mass spectrometry (GC-MS) analysis of the SUMMA canisters targeted a select group of fluorinated VOCs. The select group of fluorinated VOCs is presented in Table 3-2. Samples were analyzed following the TO-15 analytical procedure. Details of Method TO-15 is contained in *EPA/625/R-96/010b: Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air Second Edition Compendium Method TO-15 Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)*. Details of the equipment-specific analyses are found in *ECAB-144: Standard Operating Procedure for Determination of Volatile Organic Compounds in Whole Air Samples Collected in Canisters Using the Agilent 6890/5973N GC-MSD*. Multiple laboratory blanks and control samples were included as part of the sample analyses.

Table 3-2. List of Select Target Fluorinated VOCs.

Target	CAS Registry Number
TFE	116-14-3
HFP	116-15-4
E1	3330-15-2
E2	116-15-4
4:2 FTOH	2043-47-2
6:2 FTOH	647-42-7

4.0 Results and Discussion

4.1 Modified Method 0010 Targeted PFAS Results

4.1.1 Modified Method 0010 Sampling and Analytical Train Performance

As stated previously, evaluating the quantitative measurement performance of targeted polar, semivolatile, and nonvolatile PFAS compounds was a primary objective of this research study.

The ability to incorporate the PFOA and PFOS PSS into the method and determine their recoveries is the primary metric for assessing overall quanitative measurement quality. Specifically, the PSS are used to mimic the actual or "native" PFAS compounds targeted for quantitative analysis. They are measured in exactly the same way, which is why they are spiked on the XAD-2 sampling media prior to sampling. The PSS went through all the associated sampling and analytical treatments, and are quantified in the same way as the targeted native PFAS compounds. The use of PSS for emissions testing, especially where isotope dilution analyses are used, is the primary tool used for performance-based measurements, providing sample-specific quantitative assessment of overall measurement data quality. Successful incorporation of PSS into modified Method 0010 is a critcal requisite for the establishment of a formal targeted, quantitative PFAS emissions measurement method.

As the native PFAS compounds and PSS are quantified by isotope dilution, the absolute recovery of the preextraction IS is a critical analytical metric. Poor absolute IS recoveries can compromise quantitation of target analytes (a minimum absolute recovery of 20% and a maximum of 130% is typically required). As a result, this study sought to determine the absolute recovery of the method's isotopically labeled IS.

Tables 4-1 and 4-2 present the absolute recovery, by fraction, for the 19 isotopically labelled isotopologues used to quantify the targeted PFAS compounds, including the PFOA and PFOS PSS. The majority, but not all, of the absolute IS recoveries are in the desired range of 20% – 130%. Recoveries exceeding 130% appear to be the direction where absolute recoveries were exceeded. Most importantly, the XAD-2 IS recoveries were commonly greater than 50% and less than 130%, indicating the methanol/ammonium hydroxide approach is effective at recovering polar PFAS compounds.

Tables 4-3 and 4-4 present the recoveries, by fraction, of the PSS for PFOA and PFOS. This study was not only interested in the overall recovery of the PSS (a minimum recovery of 70% and a maximum of 130% is typically required for PSS), but also their distribution in the train, particularly if they moved from the XAD-2 into the condensate or breakthrough XAD-2. Table 4-3 indicates PSS recoveries for PFOA and PFOS performed quite well, especially the PFOA PSS. For the PFOA PSS, all three (3) emissions sample runs with the spiked XAD-2 fractions had PSS recoveries well within 70 – 130%. Moreover, there is no evidence the PSS had migrated to the condensate, which is a very important finding. For the PFOS PSS, only two (2) of the emissions sample runs with the spiked XAD-2 fractions had PSS recoveries well within 70 – 130%. The third was only mariginally below 70%. This is not a failure, simply an indication of what is indeed capable. The 70 – 130% PSS limit is desired and not a fixed requirement. A PSS recovery of 50 – 150% may also be suitable and is a tolerance limit associated with many other emissions measurement methods. These PSS recovery results demonstrate the incorporation of PSS in the modified Method 0010 train is successful and is the primary factor in developing a formal, quantitative targeted PFAS emission test method. The list of PSS compounds must be expanded in order to be more comprehensively representative.

Tables 4-5 through 4-8 present estimated in-stack emissions RLs and MDLs based on analytical RLs and MDLs for each modified Method 0010 train fraction. Reporting Limits (RLs) and Method Detection Limits (MDLs) were determined and reported by Test America. RLs are the lowest quantitative levels that can be reported and are based on the lowest calibration standard. RLs are reported for each individual sample fraction and are adjusted for individual final sample volumes. MDLs are derived from a formal MDL study, specific to each sample fraction or type (e.g., filter, XAD-2, impinger contents). The MDL study followed the approach found in Appendix B to 40 CFR Part 136 - Definition and Procedure for the Determination of the Method Detection Limit. The method detection limit (MDL) is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. The MDL is established by processing a minimum of seven spiked samples and seven method blank samples through all steps of the analytical method and determining the statistical MDL value. MDLs were determined for each sample fraction and MDLs are reported for each individual sample fraction and adjusted for individual final sample volumes.

These estimated in-stack levels are based on a $3m^3$ sample volume. This information is necessary for understanding modified Method 0010 emission measurement capabilities, which are used to inform such functions as potential DRE calculation feed material requirements, control technology efficiency calculations, and potential regulatory emission compliance reporting limits.

These are the data specifically necessary to support development and release of a formal EPA emissions test method for quantitative, targeted polar PFAS producing data of known and acceptable quality. The IS and PSS recoveries achieved indicate a method is indeed possible. As a result of this study, the preparation of EPA DRAFT OTM 45 is now acknowledged and underway.

Table 4-1. Internal Standard Recoveries from MeOH Extractions

	Run 1			Run 3			Run 5			Blank Train (QC)		
	% Recovery			% Recovery			% Recovery			% Recovery		
Internal Standards	Filter	BH	Condensate	Filter	BH	Condensate	Filter	BH	Condensate	Filter	BH	Condensate
13C2 PFDA	107	78	124	98	73	109	94	55	112	92	83	102
13C2 PFDoA	99	92	132	102	86	109	99	54	118	90	105	98
13C2 PFHxA	108	84	115	98	80	108	95	81	102	92	93	97
13C2 PFTeDA	104	77	127	90	67	114	94	50	117	82	107	94
13C2 PFUnA	110	86	126	103	83	109	99	55	111	91	94	100
13C3 HFPO-DA	83	77	121	76	60	96	84	70	103	74	79	96
13C4 PFBA	103	52	114	92	49	99	91	65	100	89	56	94
13C4 PFHpA	106	76	124	100	71	108	97	74	113	95	81	99
13C4 PFOA	108	91	120	98	84	108	96	78	111	92	99	94
13C4 PFOS	98	90	120	91	85	108	89	59	107	89	94	96
13C5 PFNA	106	84	128	100	81	114	96	65	114	92	93	100
13C5 PFPeA	101	60	111	94	60	101	90	66	98	86	68	93
13C8 FOSA	99	53	120	89	52	107	89	25	106	80	89	99
18O2 PFHxS	111	85	135	106	83	121	101	69	116	103	86	105
d3-NMeFOSAA	68	75	106	93	79	91	88	52	93	82	100	85
d5-NEtFOSAA	111	92	118	110	85	89	101	51	100	93	108	82
M2-4:2 FTS	129	156	131	108	164	125	109	131	103	92	174	80
M2-6:2 FTS	144	150	176	124	139	130	112	97	126	91	186	86
M2-8:2 FTS	167	103	135	124	90	113	110	57	116	82	105	87

BH= Back Half fraction of sampling trains. Contains XAD-2.

Table 4-2. Average Internal Standard Recoveries by MeOH Extraction Per Sampling Train Fraction

	Filter				BH				Condensate			
Internal Standards	Average Recovery (%)	RSD (%)	Max	Min	Average Recovery (%)	RSD (%)	Max	Min	Average Recovery (%)	RSD (%)	Max	Min
13C2 PFDA	98	6.8	107	92	72	16.9	83	55	112	8.2	124	102
13C2 PFDoA	98	5.3	102	90	84	25.7	105	54	114	12.6	132	98
13C2 PFHxA	98	7.1	108	92	85	7	93	80	106	7.4	115	97
13C2 PFTeDA	93	9.9	104	82	75	31.8	107	50	113	12.2	127	94
13C2 PFUnA	101	7.9	110	91	80	21.4	94	55	112	9.7	126	100
13C3 HFPO-DA	79	6.3	84	74	72	12	79	60	104	11.3	121	96
13C4 PFBA	94	6.7	103	89	56	12.5	65	49	102	8.4	114	94
13C4 PFHpA	100	4.8	106	95	76	5.6	81	71	111	9.4	124	99
13C4 PFOA	99	6.9	108	92	88	10.3	99	78	108	10	120	94
13C4 PFOS	92	4.7	98	89	82	19.2	94	59	108	9.1	120	96
13C5 PFNA	99	6.1	106	92	81	14.5	93	65	114	10	128	100
13C5 PFPeA	93	6.9	101	86	64	6.5	68	60	101	7.5	111	93
13C8 FOSA	89	8.7	99	80	55	48	89	25	108	8.1	120	99
18O2 PFHxS	105	4.1	111	101	81	9.8	86	69	119	10.4	135	105
d3-NMeFOSAA	83	13.1	93	68	77	25.7	100	52	94	9.4	106	85
d5-NEtFOSAA	104	8.2	111	93	84	28.6	108	51	97	16.1	118	82
M2-4:2 FTS	110	13.8	129	92	156	11.8	174	131	110	21.1	131	80
M2-6:2 FTS	118	18.8	144	91	143	25.6	186	97	130	28.4	176	86
M2-8:2 FTS	121	29.3	167	82	89	25	105	57	113	17.5	135	87

BH= Back Half fraction of sampling trains. Contains XAD-2.

RSD= Relative Standard Deviation

Table 4-3. Pre-Sampling Surrogate Recoveries from MeOH Extractions Per Sampling Train and Fraction

	Run 1			Run 3			Run 5			Blank Train (QC)		
	% Recovery			% Recovery			% Recovery			% Recovery		
Pre-Sampling Surrogates	BH	Condensate	BT	BH	Condensate	BT	BH	Condensate	BT	BH	Condensate	BT
13C8 PFOA	103	0.1	129	98	0.1	122	89	0	111	111	0	117
13C8 PFOS	85	0	92	84	0	84	58	0	65	65	0	86

BH= Back Half Sampling Train Fraction. Contains XAD-2.

BT= Break Through Sampling Train Fraction. Contains XAD-2.

Table 4-4. Average Pre-Sampling Surrogate Recoveries by MeOH Extraction Per Sampling Train Fraction

	BH				Condensate				BT			
Pre-Sampling Surrogates	Average (%)	RSD (%)	Max	Min	Average (%)	RSD (%)	Max	Min	Average (%)	RSD (%)	Max	Min
13C8 PFOA	100.3	9.20	111	89	0	88.80	0.1	0	119.8	6.40	129	111
13C8 PFOS	73	18.60	85	58	0	200.00	0	0	81.8	14.30	92	65

BH= Back Half Sampling Train Fraction. Contains XAD-2.

BT= Break Through Sampling Train Fraction. Contains XAD-2.

RSD= Relative Standard Deviation

Table 4-5. Front Half (Filter) Fraction Sampling Train RLs and MDLs

Analyte Description	CAS Number	RL (ng/fraction)	MDL (ng/fraction)	RL (ng/m3)	MDL (ng/m3)	RL (PPQ)	MDL (PPQ)
Perfluorobutanoic acid (PFBA)	375-22-4	3.900	1.930	1.30	0.64	146.02	72.26
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.500	0.134	0.17	0.04	15.17	4.07
Perfluorohexanoic acid (PFHxA)	307-24-4	0.500	0.100	0.17	0.03	12.76	2.55
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.500	0.167	0.17	0.06	11.01	3.68
Perfluorooctanoic acid (PFOA)	335-67-1	0.900	0.472	0.30	0.16	17.42	9.13
Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.165	0.17	0.06	8.63	2.85
Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.107	0.17	0.04	7.79	1.67
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.700	0.344	0.23	0.11	9.94	4.89
Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.147	0.17	0.05	6.52	1.92
Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.0860	0.17	0.03	6.03	1.04
Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.145	0.17	0.05	5.61	1.63
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.128	0.17	0.04	13.35	3.42
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.109	0.17	0.04	11.44	2.49
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.500	0.241	0.17	0.08	10.01	4.83
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0920	0.17	0.03	8.90	1.64
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.500	0.102	0.17	0.03	8.01	1.63
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.130	0.17	0.04	7.28	1.89
Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.116	0.17	0.04	6.68	1.55
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.500	0.126	0.17	0.04	8.03	2.02
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	1.00	0.509	0.33	0.17	14.03	7.14
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.900	0.458	0.30	0.15	12.32	6.27
4:2 FTS	757124-72-4	0.500	0.263	0.17	0.09	12.21	6.42
6:2 FTS	27619-97-2	0.500	0.167	0.17	0.06	9.36	3.13
8:2 FTS	39108-34-4	0.500	0.272	0.17	0.09	7.59	4.13
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.500	0.0600	0.17	0.02	10.60	1.27
HFPO-DA (GenX)	13252-13-6	3.00	1.51	1.00	0.50	72.84	36.66
F-53B Major	756426-58-1	0.500	0.215	0.17	0.07	7.52	3.24
F-53B Minor	763051-92-9	0.500	0.247	0.17	0.08	6.33	3.13

RL: Reporting Limit
MDL: Method Detection Limit
PPQ: Parts Per Quadrillion

Table 4-6. Back Half (XAD-2) Fraction Sampling Train RLs and MDLs

Analyte Description	CAS Number	RL (ng/fraction)	MDL (ng/fraction)	RL (ng/m3)	MDL (ng/m3)	RL (PPQ)	MDL (PPQ)
Perfluorobutanoic acid (PFBA)	375-22-4	7.20	3.59	2.40	1.20	269.57	134.41
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.800	0.400	0.27	0.13	24.28	12.14
Perfluorohexanoic acid (PFHxA)	307-24-4	1.40	0.717	0.47	0.24	35.72	18.30
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.700	0.345	0.23	0.12	15.41	7.59
Perfluorooctanoic acid (PFOA)	335-67-1	0.900	0.434	0.30	0.14	17.42	8.40
Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.191	0.17	0.06	8.63	3.30
Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.130	0.17	0.04	7.79	2.03
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.700	0.325	0.23	0.11	9.94	4.62
Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.101	0.17	0.03	6.52	1.32
Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.156	0.17	0.05	6.03	1.88
Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.211	0.17	0.07	5.61	2.37
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.167	0.17	0.06	13.35	4.46
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.245	0.17	0.08	11.44	5.61
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.700	0.351	0.23	0.12	14.02	7.03
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0990	0.17	0.03	8.90	1.76
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.10	0.538	0.37	0.18	17.63	8.62
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.233	0.17	0.08	7.28	3.39
Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.165	0.17	0.06	6.68	2.20
Perfluorooctanesulfonamide (FOSA)	754-91-6	0.500	0.191	0.17	0.06	8.03	3.07
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.600	0.313	0.20	0.10	8.42	4.39
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.700	0.332	0.23	0.11	9.59	4.55
4:2 FTS	757124-72-4	0.500	0.191	0.17	0.06	12.21	4.66
6:2 FTS	27619-97-2	0.500	0.179	0.17	0.06	9.36	3.35
8:2 FTS	39108-34-4	0.700	0.366	0.23	0.12	10.62	5.55
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.600	0.311	0.20	0.10	12.72	6.59
HFPO-DA (GenX)	13252-13-6	1.60	0.814	0.53	0.27	38.85	19.76
F-53B Major	756426-58-1	0.500	0.182	0.17	0.06	7.52	2.74
F-53B Minor	763051-92-9	0.500	0.150	0.17	0.05	6.33	1.90

RL: Reporting Limit
MDL: Method Detection Limit
PPQ: Parts Per Quadrillion

Table 4-7. Condensate (Impinger) Fraction Sampling Train RLs and MDLs

Analyte Description	CAS Number	RL (ng/fraction)	MDL (ng/fraction)	RL (ng/m3)	MDL (ng/m3)	RL (PPQ)	MDL (PPQ)
Perfluorobutanoic acid (PFBA)	375-22-4	1.50	0.730	0.50	0.24	56.16	27.33
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.500	0.0550	0.17	0.02	15.17	1.67
Perfluorohexanoic acid (PFHxA)	307-24-4	0.500	0.101	0.17	0.03	12.76	2.58
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.500	0.107	0.17	0.04	11.01	2.36
Perfluorooctanoic acid (PFOA)	335-67-1	0.700	0.370	0.23	0.12	13.55	7.16
Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.100	0.17	0.03	8.63	1.73
Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.149	0.17	0.05	7.79	2.32
Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.600	0.324	0.20	0.11	8.52	4.60
Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.110	0.17	0.04	6.52	1.44
Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.106	0.17	0.04	6.03	1.28
Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.222	0.17	0.07	5.61	2.49
Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.215	0.17	0.07	13.35	5.74
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.0750	0.17	0.03	11.44	1.72
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.500	0.232	0.17	0.08	10.01	4.65
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0630	0.17	0.02	8.90	1.12
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.800	0.420	0.27	0.14	12.82	6.73
Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.0600	0.17	0.02	7.28	0.87
Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.233	0.17	0.08	6.68	3.11
Perfluorooctanesulfonamide (FOSA)	754-91-6	1.00	0.507	0.33	0.17	16.05	8.14
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.800	0.384	0.27	0.13	11.22	5.39
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.800	0.389	0.27	0.13	10.95	5.33
4:2 FTS	757124-72-4	0.500	0.137	0.17	0.05	12.21	3.35
6:2 FTS	27619-97-2	1.00	0.520	0.33	0.17	18.72	9.73
8:2 FTS	39108-34-4	0.500	0.168	0.17	0.06	7.59	2.55
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.500	0.0350	0.17	0.01	10.60	0.74
HFPO-DA (GenX)	13252-13-6	12.0	5.98	4.00	1.99	291.36	145.20
F-53B Major	756426-58-1	0.500	0.109	0.17	0.04	7.52	1.64
F-53B Minor	763051-92-9	0.500	0.150	0.17	0.05	6.33	1.90

RL: Reporting Limit
MDL: Method Detection Limit
PPQ: Parts Per Quadrillion

Table 4-8. Total Sampling Train RL and MDLs

Analyte Description	CAS Number	RL (ng/train)	MDL (ng/train)	RL (ng/m3)	MDL (ng/m3)	RL (PPQ)	MDL (PPQ)
Perfluorobutanoic acid (PFBA)	375-22-4	12.60	6.25	4.20	2.08	471.75	234.00
Perfluoropentanoic acid (PFPeA)	2706-90-3	1.80	0.59	0.60	0.20	54.63	17.88
Perfluorohexanoic acid (PFHxA)	307-24-4	2.40	0.92	0.80	0.31	61.24	23.42
Perfluoroheptanoic acid (PFHpA)	375-85-9	1.70	0.62	0.57	0.21	37.42	13.63
Perfluorooctanoic acid (PFOA)	335-67-1	2.50	1.28	0.83	0.43	48.38	24.69
Perfluorononanoic acid (PFNA)	375-95-1	1.50	0.46	0.50	0.15	25.90	7.87
Perfluorodecanoic acid (PFDA)	335-76-2	1.50	0.39	0.50	0.13	23.38	6.02
Perfluoroundecanoic acid (PFUnA)	2058-94-8	2.00	0.99	0.67	0.33	28.41	14.11
Perfluorododecanoic acid (PFDoA)	307-55-1	1.50	0.36	0.50	0.12	19.57	4.67
Perfluorotridecanoic acid (PFTriA)	72629-94-8	1.50	0.35	0.50	0.12	18.10	4.20
Perfluorotetradecanoic acid (PFTeA)	376-06-7	1.50	0.58	0.50	0.19	16.83	6.49
Perfluorobutanesulfonic acid (PFBS)	375-73-5	1.50	0.51	0.50	0.17	40.06	13.62
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	1.50	0.43	0.50	0.14	34.33	9.82
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	1.70	0.82	0.57	0.27	34.05	16.50
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	1.50	0.25	0.50	0.08	26.71	4.52
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	2.40	1.06	0.80	0.35	38.46	16.98
Perfluorononanesulfonic acid (PFNS)	68259-12-1	1.50	0.42	0.50	0.14	21.85	6.16
Perfluorodecanesulfonic acid (PFDS)	335-77-3	1.50	0.51	0.50	0.17	20.03	6.86
Perfluorooctanesulfonamide (FOSA)	754-91-6	2.00	0.82	0.67	0.27	32.11	13.23
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	2.40	1.21	0.80	0.40	33.67	16.92
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	2.40	1.18	0.80	0.39	32.86	16.14
4:2 FTS	757124-72-4	1.50	0.59	0.50	0.20	36.63	14.43
6:2 FTS	27619-97-2	2.00	0.87	0.67	0.29	37.43	16.21
8:2 FTS	39108-34-4	1.70	0.81	0.57	0.27	25.79	12.23
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	1.60	0.41	0.53	0.14	33.91	8.61
HFPO-DA (GenX)	13252-13-6	16.60	8.30	5.53	2.77	403.05	201.62
F-53B Major	756426-58-1	1.50	0.51	0.50	0.17	22.57	7.61
F-53B Minor	763051-92-9	1.50	0.55	0.50	0.18	19.00	6.93

RL: Reporting Limit
MDL: Method Detection Limit
PPQ: Parts Per Quadrillion

4.1.2 Data Quality Issues (Blank Contamination)

Upon examination of the analytical data, the XAD-2 sampling media had trace level PFAS contamination. Table 4-9 presents the reported analytical data for all Run 1, 3, and 5 XAD-2 sample fractions (BH and BT), as well as the field blank (BH and BT) and trip blank. A total of nine (9) contaminants were present. As can be seen, the contaminant levels were consistent; the PFAS compounds present, as well as levels for each compound. The absolute levels vary among compounds from only 1 – 2 times the respective PFAS compound RLs (e.g., PFBA, PFPeA, PFOS), to as high as nearly 100 times corresponding RL for PFHpA. While this contamination is undesirable, it does not significantly impair the quality of this study and the conclusions drawn. As there is no apparent difference between the contamination levels found in samples compared to the quality control blanks, background contamination level subtractions are possible. Even so, going forward, all PFAS data are reported both with and without the contaminant levels included.

After consultation with TA, the source of the XAD-2 contamination was attributed to the XAD-2 manufacturer. The XAD-2 sampling material is commonly purchased from the supplier precleaned for use. However, a contamination was found to be present even after TA's cleaning process. As the use of XAD-2 for trace level PFAS emissions measurements was an emerging need at the time of these tests, the process for achieving background PFAS levels below MDLs had not been established. The process has now been established and XAD-2 sampling material is now commonly available background PFAS levels below MDLs.

Table 4-9. XAD-2 Contamination (ng/Sample)

Analyte	Run 1		Run 3		Run 5		Field Blank		Trip Blank
	BH XAD-2	BT XAD-2	BH XAD-2	BT XAD-2	BH XAD-2	BT XAD-2	BH XAD-2	BT XAD-2	BT XAD-2
Perfluorobutanoic acid (PFBA)	8.48	8.83	7.11	9.38	2.48	2.35	10.5	9.3	9.02
Perfluoropentanoic acid (PFPeA)	2.07	1.9	1.67	1.8	ND	ND	1.8	2	1.86
Perfluorohexanoic acid (PFHxA)	52.6	50.2	45.7	51.3	1.38	1.1	55.1	52.6	50.2
Perfluoroheptanoic acid (PFHpA)	77.9	71.7	74.4	77.4	ND	2.32	84.1	80.8	74.4
Perfluorooctanoic acid (PFOA)	28.4	25.6	26.6	25.5	1.74	ND	32.7	29.3	32.2
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	26.5	25.6	24.3	25.1	ND	ND	28.5	26.2	24.5
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	6.66	5.99	5.75	6.62	ND	ND	7.47	6.91	5.74
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	1.79	1.85	1.6	1.92	ND	ND	1.87	1.63	1.88
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	2.65	4.59	2.75	3.16	2.26	5.26	5.19	5.53	4.07
F-53B Major	ND	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND	ND	ND

4.1.3 Targeted PFAS Emissions Data

The targeted PFAS emissions data are presented in Table 4-10 and reported both with the XAD-2 results included and with the XAD-2 results excluded. As can be seen, the results with the XAD-2 results excluded are at extremely low levels. What was detected in the remaining train fractions were at or near fraction RLs. In summary, PFAS emissions were minimal. However, these results also indicate extremely low levels are present in stack emissions and further support the excellent measurment sensitivities achieved with the modified Method 0010 sampling train.

Table 4-10. Targeted PFAS Emissions Concentrations

Analyte	Run 1		Run 3		Run 5	
	Total	Total (excluding XAD-2 Contamination)	Total	Total (excluding XAD-2 Contamination)	Total	Total (excluding XAD-2 Contamination)
	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3	ng/m3
Perfluorobutanoic acid (PFBA)	5.3	0.3	4.1	0.4	1.5	0.4
Perfluoropentanoic acid (PFPeA)	1.2		0.8			
Perfluorohexanoic acid (PFHxA)	29.8		22.5		0.6	
Perfluoroheptanoic acid (PFHpA)	43.4		35.1		0.5	
Perfluorooctanoic acid (PFOA)	16.9	1.3	13.1	0.5	0.9	0.5
Perfluorononanoic acid (PFNA)						
Perfluorodecanoic acid (PFDA)	15.1		11.4			
Perfluoroundecanoic acid (PFUnA)						
Perfluorododecanoic acid (PFDoA)						
Perfluorotridecanoic acid (PFTriA)						
Perfluorotetradecanoic acid (PFTeA)						
Perfluorobutanesulfonic acid (PFBS)	3.7		2.9			
Perfluoropentanesulfonic acid (PFPeS)						
Perfluorohexanesulfonic acid (PFHxS)						
Perfluoroheptanesulfonic Acid (PFHpS)						
Perfluorooctanesulfonic acid (PFOS)	1.1		0.8			
Perfluorononanesulfonic acid (PFNS)						
Perfluorodecanesulfonic acid (PFDS)						
Perfluorooctanesulfonamide (FOSA)			0.4			
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)						
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)						
4:2 FTS						
6:2 FTS	0.5	0.5	0.4			0.0
8:2 FTS	1.4	1.4	0.3	0.4	0.4	0.4
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)						
HFPO-DA (GenX)	2.6	0.5	2.3	1.1	2.9	1.1
F-53B Major						
F-53B Minor						
Total	120.9	4.0	94.1	2.5	6.8	2.4

4.1.4 Nontargeted PFAS Emissions Data

Nontargeted analyses by high resolution mass spectrometry with spectral data interpretation were intended for the Method 0010 sampling train polar and nonpolar sample fractions. Unfortunately, due to the unavailability of the Method 0010 sampling train sample extracts and complications due to the Coronavirus, particularly closure of the ORD analytical laboratories, these analyses have not yet been performed. Once these analyses have been completed, a supplemental report will be prepared and submitted to SERDP. These analyses are the sole means for enabling the intended comprehensive PIC characterization.

4.2 Modified Method 18 HF and TF Results

Table 4-11 presents the measured masses of F for the TF and HF emissions emissions samples, including the field blank. All HF measurements were nondetect. Table 4-12 presents the in-stack HF measurement limits based on MDLs and RLs.

Few of the sample fractions (impingers) within two (2) of the three (3) emissions tests (Run 1 and 2) had any detected TF mass. For Run 1, impingers 5, 7, and 8 had estimated quantities between the MDL and RL. For Run 2, impingers 2 and 3 had estimated quantities between the MDL and RL. For Run 3, all TF measurements were nondetect. Table 4-13 summarizes these results. For perspective and to aid in data interpretation, the TF measured was normalized to PFOA. The equivalent molar mass of fluorine in the PFOA molecule was related to the measured mass of fluorine to calculate presented PFOA concentrations.

Table 4-14 represents TOF and was derived by subtracting the total mass of inorganic fluoride from the total fluoride. The remaining mass of organic fluoride was also normalized to PFOA using the same approach. It should be noted the calculated equivalent PFOA concentrations are in units of mg/m^3 for each impinger, with total modified Method 18 train capture generally greater than 100 mg/m^3 when the RL for each impinger is considered. As a result, measurement sensistivity is greater than 10^6 less senstive than the equaivlent PFOA measurement sensitivity for the modified Method 0010 sampling train which is < 1 ng/m^3. What these measurements clearly show is a much more sensitive TOF measurement method is needed.

Table 4-11. Fluorine Mass Results

		Impinger Number							
	Analyte (ug/sample as F)	1	2	3	4	5	6	7	8
Run 1	Total Fluorine (TF)	ND	ND	ND	ND	6210	ND	9600	8090
	TF RL	27800	21800	15200	13500	12000	13300	13200	8250
	TF MDL	13900	10900	7580	6730	5990	6630	6620	4130
	Hydrogen Fluoride (HF)	ND	ND	ND	ND	ND	ND	ND	ND
	HF RL	6120	4790	3220	2960	2630	2920	2910	1820
	HF MDL	2780	2180	1460	1350	1200	1330	1320	825
Run 2	Total Fluorine (TF)	ND	17200	11800	ND	ND	ND	ND	ND
	TF RL	23300	24600	21700	14400	11500	11800	12400	10500
	TF MDL	11600	12300	10800	7180	5740	5910	6210	5270
	Hydrogen Fluoride (HF)	ND	ND	ND	ND	ND	ND	ND	ND
	HF RL	5120	5400	4760	3160	2530	2600	2730	2320
	HF MDL	2330	2460	2170	1440	1150	1180	1240	1050
Run 3	Total Fluorine (TF)	ND	ND	ND	ND	ND	ND	ND	ND
	TF RL	33200	27000	14400	11600	12200	11300	11700	10600
	TF MDL	16600	13500	7220	5780	6100	5660	5830	5280
	Hydrogen Fluoride (HF)	ND	ND	ND	ND	ND	ND	ND	ND
	HF RL	7290	5940	3160	2540	2680	2490	2560	2300
	HF MDL	3320	2700	1440	1160	1220	1130	1170	1050
Field Blank	Total Fluorine (TF)	ND	ND	ND	ND	ND	ND	ND	ND
	TF RL	10900	10500	10900	10400	10900	10400	10500	10400
	TF MDL	5430	5260	5430	5200	5430	5180	5260	5200
	Hydrogen Fluoride (HF)	ND	ND	ND	ND	ND	ND	ND	ND
	HF RL	2390	2310	2390	2290	2390	2280	2320	2290
	HF MDL	1090	1050	1090	1040	1090	1040	1050	1040

Table 4-12. Modified Method 18 HF Results

	Impinger #	1 (H2O)		2 (H2O)		3 (MeOH)		4 (MeOH)		5 (MeOH)		6 (MeOH)		7 (MeOH)		8 (MeOH)		Total	
	HF	mg/ m3	ppm	mg/ m3	ppm	mg /m3	ppm	mg/ m3	ppm	mg/ m3	ppm	mg /m3	ppm	mg/ m3	ppm	mg/ m3	ppm	mg/ m3	ppm
Run 1	Measured	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	RL	6.8	8.1	5.3	6.4	3.6	4.3	3.3	3.9	2.9	3.5	3.2	3.9	3.2	3.9	2.0	2.4	30.4	36.4
	MDL	3.1	3.7	2.4	2.9	1.6	1.9	1.5	1.8	1.3	1.6	1.5	1.8	1.5	1.8	0.9	1.1	13.8	16.6
Run 2	Measured	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	RL	4.6	5.5	4.9	5.8	4.3	5.1	2.8	3.4	2.3	2.7	2.3	2.8	2.5	2.9	2.1	2.5	25.8	30.9
	MDL	2.1	2.5	2.2	2.7	2.0	2.3	1.3	1.6	1.0	1.2	1.1	1.3	1.1	1.3	0.9	1.1	11.7	14.1
Run 3	Measured	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	RL	6.0	7.2	4.9	5.9	2.6	3.1	2.1	2.5	2.2	2.6	2.1	2.5	2.1	2.5	1.9	2.3	23.9	28.6
	MDL	2.7	3.3	2.2	2.7	1.2	1.4	1.0	1.1	1.0	1.2	0.9	1.1	1.0	1.2	0.9	1.0	10.9	13.0

Table 4-13. Modified Method 18 TF Results

	Impinger #	1 (H2O)	2 (H2O)	3 (MeOH)	4 (MeOH)		5 (MeOH)	6 (MeOH)	7 (MeOH)	8 (MeOH)	Total
	TF	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)		mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)
Run 1	Measured	ND	ND	ND	ND		**9.5**	ND	**14.7**	**12.4**	**36.6**
	RL	42.6	33.4	23.3	20.7		18.4	20.4	20.2	12.6	191.5
	MDL	21.3	16.7	11.6	10.3		9.2	10.2	10.1	6.3	95.7
Run 2	Measured	ND	**21.4**	**14.7**	ND		ND	ND	ND	ND	**36.0**
	RL	28.9	30.5	26.9	17.9		14.3	14.7	15.4	13.0	161.6
	MDL	14.4	15.3	13.4	8.9		7.1	7.3	7.7	6.5	80.7
Run 3	Measured	ND	ND	ND	ND		ND	ND	ND	ND	ND
	RL	37.8	30.7	16.4	13.2		13.9	12.9	13.3	12.1	150.1
	MDL	18.9	15.4	8.2	6.6		6.9	6.4	6.6	6.0	75.0

Table 4-14. Modified Method 18 TOF Results

	Impinger #	1 (H2O)	2 (H2O)	3 (MeOH)	4 (MeOH)	5 (MeOH)	6 (MeOH)	7 (MeOH)	8 (MeOH)	Total
	TOF	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)	mg/m3 (as PFOA)
Run 1	Measured	ND	ND	ND	ND	**9.5**	ND	**14.7**	**12.4**	**36.6**
	RL	33.2	26.1	18.3	16.1	14.4	15.9	15.8	9.8	149.6
	MDL	17.0	13.4	9.4	8.2	7.3	8.1	8.1	5.1	76.6
Run 2	Measured	ND	**21.4**	**14.7**	ND	ND	ND	ND	ND	**36.0**
	RL	22.6	23.8	21.0	14.0	11.1	11.4	12.0	10.2	126.1
	MDL	11.5	12.2	10.7	7.1	5.7	5.9	6.2	5.2	64.5
Run 3	Measured	ND	ND	ND	ND	ND	ND	ND	ND	ND
	RL	29.5	24.0	12.8	10.3	10.8	10.0	10.4	9.4	117.2
	MDL	15.1	12.3	6.6	5.3	5.6	5.2	5.3	4.8	60.0

4.3 SUMMA Canister Results

Table 4-14 presents the results for select targeted fluorinated volatile compounds. These compounds reflect specific PFAS compounds that may be present in industrial applications (i.e., E1, E2, the FTOHs), while TFE and HFP may be potential thermal degradation products. All target compounds were not detected in any samples.

Table 4-15. Select Targeted Fluorinated VOC Results

Compound	CAS	MW	Field Blank can # 700 µg/m^3	Ambient can # 176 µg/m^3	Sample 1 can #744 µg/m^3	Sample 2 can # RK9 µg/m^3	Sample 3 can # NP1 µg/m^3
E1 (Heptafluoropropyl 1,2,2,2-tetrafluorethyl ether)	3330-15-2	286.0	<9.75	<24.50	<23.31	<22.47	<24.50
E2 (2H-Perfluoro-5-methyl-3,6-dioxanonane)	3330-14-1	452.06	<15.41	<38.90	<37.02	<35.71	<38.90
4:2 Fluorotelomer	2043-47-2	264.1	<9.22	<23.06	<21.96	<21.19	<23.06
6:2 Fluorotelomer	647-42-7	364.1	<8.78	<21.95	<20.89	<20.28	<21.95
TFE (Tetrafluoroethylene)	116-14-3	100.0	<4.95	<12.39	<11.81	<11.39	<12.39
HFP (1,1,2,3,3,3-Hexafluoro-1-propene)	116-15-4	150.0	<7.23	<18.21	<17.40	<16.78	<18.21

Less than values based on MDL

4.4 Soil and Ancillary Sample Results

4.4.1 Pretreated Soil Sample Results

The results of the single pretreatment soil sample is presented in Table 4-15. PFOS was the only compound measured above the RL, present at 1.46 µg/kg (0.00146 mg/kg). It is unknown how representative the sample collected for EPA was in relation to the overall feed material, and more specifically, in relation to the feed material treated during emissions testing. The collection of representative soil samples – pre- and post-treatment – was particularly difficult due to the conditions and resulted in random grab samples. The soil piles were largely frozen and only locations where samples could be scraped at the surface were able to be collected.

A more detailed discussion of the pretreated soil results is presented in Section 4.5.2.

Table 4-16. Pre-Treatment Soil Analytical Results (µg/kg)

Target Analytes	Pre- Treatment Soil
Perfluorobutanoic acid (PFBA)	*0.120**
Perfluoropentanoic acid (PFPeA)	*0.281*
Perfluorohexanoic acid (PFHxA)	*0.222*
Perfluoroheptanoic acid (PFHpA)	***0.176****
Perfluorooctanoic acid (PFOA)	***0.238***
Perfluorononanoic acid (PFNA)	***0.0797****
Perfluorodecanoic acid (PFDA)	*0.0250**
Perfluoroundecanoic acid (PFUnA)	*0.0524**
Perfluorododecanoic acid (PFDoA)	< 0.610
Perfluorotridecanoic acid (PFTriA)	< 0.0464
Perfluorotetradecanoic acid (PFTeA)	< 0.0492
Perfluorobutanesulfonic acid (PFBS)	< 0.0288
Perfluoropentanesulfonic acid (PFPeS)	*0.0230**
Perfluorohexanesulfonic acid (PFHxS)	***0.331***
Perfluoroheptanesulfonic Acid (PFHpS)	< 0.0319
Perfluorooctanesulfonic acid (PFOS)	***1.48***
Perfluorononanesulfonic acid (PFNS)	< 0.0182
Perfluorodecanesulfonic acid (PFDS)	< 0.0355
Perfluorododecanesulfonic acid (PFDoS)	< 0.0546
Perfluorooctanesulfonamide (FOSA)	< 0.0747
NEtFOSA	< 0.0219
NMeFOSA	< 0.0373
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	< 0.355
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	< 0.3373
NMeFOSE	0.0778*
NEtFOSE	< 0.0328
4:2 FTS	< 0.337
6:2 FTS	< 0.137
8:2 FTS	0.506*
10:2 FTS	0.0636*
DONA	< 0.0164
HFPO-DA (GenX)	< 0.100
F-53B Major	< 0.0246
F-53B Minor	< 0.0200

PFAS compounds in bold are those identified by ADEC for specific treatment residual levels

Less than values based on MDL

* Denotes estimated value between MDL and RL

4.4.2 Treated Soil Sample Results

The treated soil sample results are presented in Table 4-16. A total of five (5) samples were collected, respresenting samples collected from each ~50-ton pile identified by the stakes placed in each by MCF staff.

A more detailed discussion of the treated soil samples results is presented in Section 4.5.2.

Table 4-17. Post-Treatment Soil Analytical Results (µg/kg)

Target Analytes	Stake 66	Stake 67	Stake 68	Stake 69	Stake 70
Perfluorobutanoic acid (PFBA)	*0.0537**	*0.0335**	*0.0319**	*0.0525**	*0.0659**
Perfluoropentanoic acid (PFPeA)	< 0.0738	< 0.0753	< 0.0700	< 0.0753	< 0.0658
Perfluorohexanoic acid (PFHxA)	*0.0752**	< 0.0411	< 0.0382	< 0.0411	< 0.0359
Perfluoroheptanoic acid (PFHpA)	< 0.0278	< 0.0284	< 0.0264	< 0.0284	< 0.0248
Perfluorooctanoic acid (PFOA)	< 0.0824	< 0.0841	< 0.0782	< 0.0841	< 0.0735
Perfluorononanoic acid (PFNA)	< 0.0345	< 0.0352	< 0.0327	< 0.0352	< 0.0308
Perfluorodecanoic acid (PFDA)	*0.0257**	< 0.0215	< 0.0200	< 0.0215	< 0.0188
Perfluoroundecanoic acid (PFUnA)	*0.0702**	< 0.0352	< 0.0327	< 0.0352	< 0.0308
Perfluorododecanoic acid (PFDoA)	< 0.0642	< 0.0656	< 0.0609	< 0.0656	< 0.0573
Perfluorotridecanoic acid (PFTriA)	< 0.0489	< 0.0499	< 0.0464	< 0.0499	< 0.0436
Perfluorotetradecanoic acid (PFTeA)	< 0.0517	< 0.0528	< 0.0491	< 0.0528	< 0.0462
Perfluorobutanesulfonic acid (PFBS)	< 0.0239	< 0.0245	< 0.0227	< 0.0245	< 0.0214
Perfluoropentanesulfonic acid (PFPeS)	< 0.0192	< 0.0196	< 0.0182	< 0.0196	< 0.0171
Perfluorohexanesulfonic acid (PFHxS)	***0.0582****	***0.0330****	< 0.0282	< 0.0303	< 0.0265
Perfluoroheptanesulfonic Acid (PFHpS)	< 0.0335	< 0.0342	< 0.0318	< 0.0342	< 0.0299
Perfluorooctanesulfonic acid (PFOS)	***0.440****	< 0.196	< 0.182	< 0.196	***0.1770****
Perfluorononanesulfonic acid (PFNS)	< 0.0192	< 0.0196	< 0.0182	< 0.0196	< 0.0171
Perfluorodecanesulfonic acid (PFDS)	< 0.0374	< 0.0382	< 0.0355	< 0.0382	< 0.0333
Perfluorododecanesulfonic acid (PFDoS)	< 0.0575	< 0.0587	< 0.0545	< 0.0587	< 0.0513
Perfluorooctanesulfonamide (FOSA)	< 0.0785	< 0.0802	< 0.0745	< 0.0802	< 0.0701
NEtFOSA	< 0.0230	< 0.0235	< 0.0218	< 0.235	< 0.0205
NMeFOSA	< 0.0393	< 0.0401	< 0.0373	< 0.0401	< 0.035
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	< 0.374	< 0.382	< 0.355	< 0.382	< 0.333
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	< 0.354	< 0.362	< 0.336	< 0.362	< 0.316
NMeFOSE	< 0.0680	< 0.0695	< 0.0645	< 0.0695	< 0.0607
NEtFOSE	< 0.0345	< 0.0352	< 0.0327	< 0.0352	< 0.0308
4:2 FTS	< 0.354	< 0.362	< 0.336	< 0.362	< 0.316
6:2 FTS	< 0.144	< 0.147	< 0.136	< 0.147	< 0.128
8:2 FTS	< 0.239	< 0.245	< 0.227	< 0.245	< 0.214
10:2 FTS	< 0.0479	< 0.0489	< 0.0455	< 0.0489	< 0.0427
DONA	< 0.0172	< 0.0176	< 0.0164	< 0.0176	< 0.0154
HFPO-DA (GenX)	< 0.105	< 0.108	< 0.100	< 0.108	< 0.0940
F-53B Major	< 0.0259	< 0.0264	< 0.0245	< 0.0264	< 0.0231
F-53B Minor	< 0.0211	< 0.0215	< 0.0200	< 0.0215	< 0.0188

PFAS compounds in bold are those identified by ADEC for specific treatment residual levels
Less than values based on MDL
* Denotes estimated value between MDL and RL

4.4.3 Ancillary Sample Results

Table 4-17 presents PFAS analytical results for the additional ancilllary samples that were collected representing grab samples of the baghouse dust/particulate, make-up water, and scrubber water and are provided for informational purposes only. As can be seen, most measurements were below MDLs and all results above the MDL, with the excpetion of PFOA for the scrubber sample, are estimated concentrations between the RL and MDL.

Table 4-18. Ancillary Samples Analytical Results

	Bag House Particulates	Fresh Water	Scrubber Water
Target Analytes	**µg/kg**	**ng/L**	**ng/L**
Perfluorobutanoic acid (PFBA)	*0.0430**	*0.935**	*1.75**
Perfluoropentanoic acid (PFPeA)	< 0.0721	*0.681**	*0.968**
Perfluorohexanoic acid (PFHxA)	< 0.0393	*0.703**	*1.03**
Perfluoroheptanoic acid (PFHpA)	< 0.0272	***0.399****	***0.677****
Perfluorooctanoic acid (PFOA)	< 0.0805	***1.53****	***2.84***
Perfluorononanoic acid (PFNA)	< 0.0337	< 0.254	< 0.249
Perfluorodecanoic acid (PFDA)	< 0.0206	< 0.292	< 0.286
Perfluoroundecanoic acid (PFUnA)	< 0.0337	< 1.04	< 1.01
Perfluorododecanoic acid (PFDoA)	< 0.0627	< 0.518	< 0.507
Perfluorotridecanoic acid (PFTriA)	< 0.0478	< 1.23	< 1.2
Perfluorotetradecanoic acid (PFTeA)	< 0.0506	< 0.273	< 0.267
Perfluorobutanesulfonic acid (PFBS)	< 0.0234	***0.250****	< 0.184
Perfluoropentanesulfonic acid (PFPeS)	< 0.0187	< 0.283	< 0.277
Perfluorohexanesulfonic acid (PFHxS)	< 0.0290	***0.349****	< 0.157
Perfluoroheptanesulfonic Acid (PFHpS)	< 0.0328	< 0.179	< 0.175
Perfluorooctanesulfonic acid (PFOS)	***0.209****	< 0.509	< 0.498
Perfluorononanesulfonic acid (PFNS)	< 0.0187	< 0.151	< 0.148
Perfluorodecanesulfonic acid (PFDS)	< 0.0365	< 0.302	< 0.295
Perfluorododecanesulfonic acid (PFDoS)	< 0.0562	< 0.424	< 0.415
Perfluorooctanesulfonamide (FOSA)	< 0.0768	*1.31**	< 0.323
NEtFOSA	< 0.0225	< 0.820	< 0.802
NMeFOSA	< 0.0384	< 0.405	< 0.397
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	< 0.365	< 2.92	< 2.86
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	< 0.346	< 1.79	< 1.75
NMeFOSE	< 0.0665	< 1.32	< 1.29
NEtFOSE	< 0.0337	< 0.801	< 0.784
4:2 FTS	< 0.346	< 4.9	< 4.8
6:2 FTS	< 0.140	< 1.88	*4.04**
8:2 FTS	< 0.234	< 1.88	*3.4**
10:2 FTS	< 0.0468	< 0.179	< 0.175
DONA	< 0.0169	< 0.17	< 0.166
HFPO-DA (GenX)	< 0.103	< 1.41	< 1.38
F-53B Major	< 0.0253	< 0.226	< 0.221
F-53B Minor	< 0.0206	< 0.302	< 0.295

PFAS compounds in bold are those identified by ADEC for specific treatment residual levels

Less than values based on MDL

* Denotes estimated value between MDL and RL

4.5 Thermal Treatment Results

4.5.1 MCF Thermal Treatment Process Results

The MCF collects a variety of data as part of normal operations and as needed to meet regulatory compliance requirements. Data are collected at 1-minute intervals through a computerized continuous emission monitoring system (CEMS). On behalf of NRC, Hedgerow Hill prepared a memo detailing the operational information and conditions during the test that includes the complete CEMS reports. This memo is provided in Appendix B. These data have been summarized here to establish baseline plant operations information specific to each air emissions data collection test run. While a total of six (6) test runs were completed, the three (3) test runs where PFAS sampling for targeted, quantitative analyses (Runs 1, 3, and 5) are the subject of the data requested and provided, and operations data are provided for the 4-hour period associated with each run. Parameters for which operations data were collected include temperature from several points in the treatment system, carbon monoxide (CO), oxygen (O2), and contaminated material feed rate. Operation of the primary treatment kiln, including temperatures and other operating parameters, are considered proprietary and were not provided. Figures 4-1 and 4-2 provide real-time graphic depictions for CO/O2 and secondary combustion chamber (SCC) temperature during each sample run.

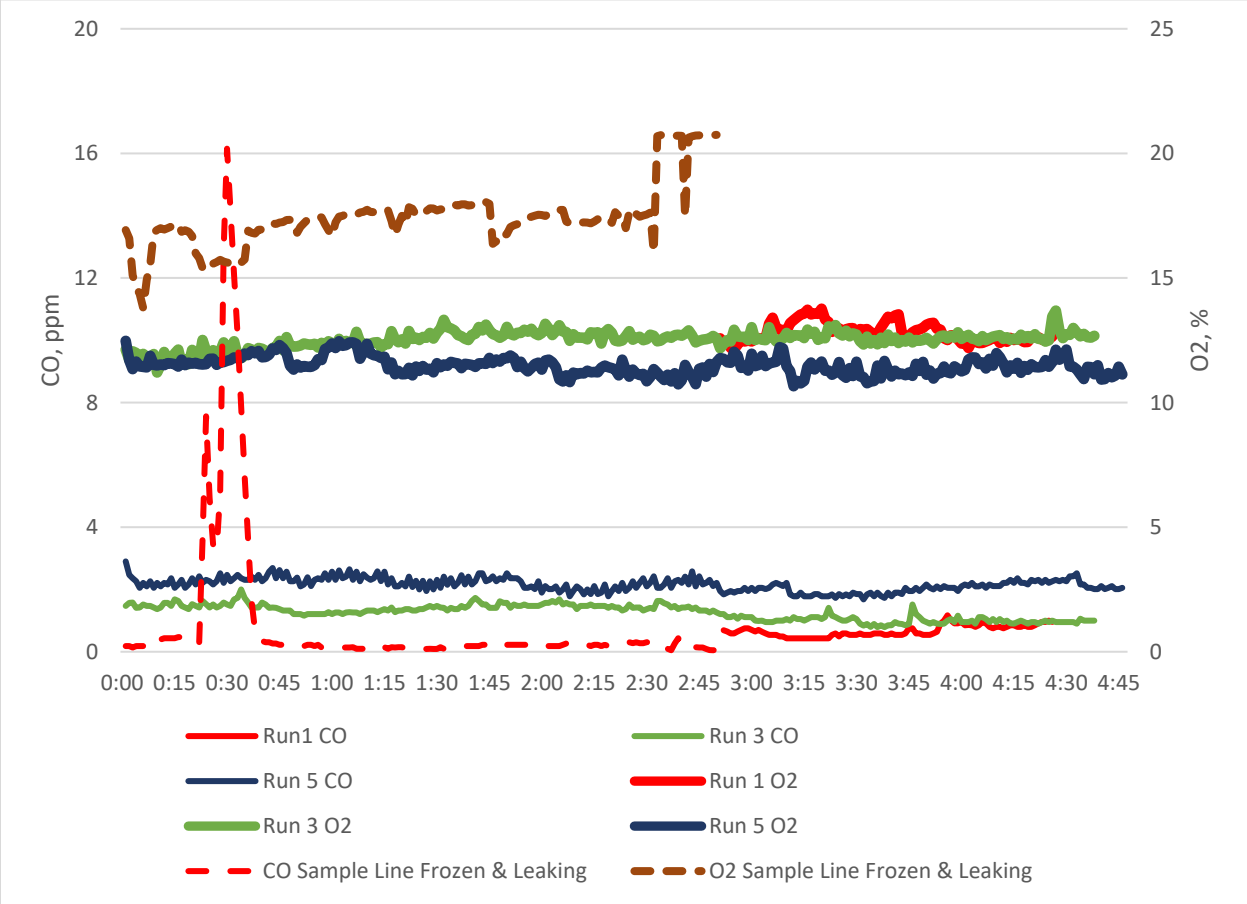

Figure 4-1. MCF CO and O2 During Sampling

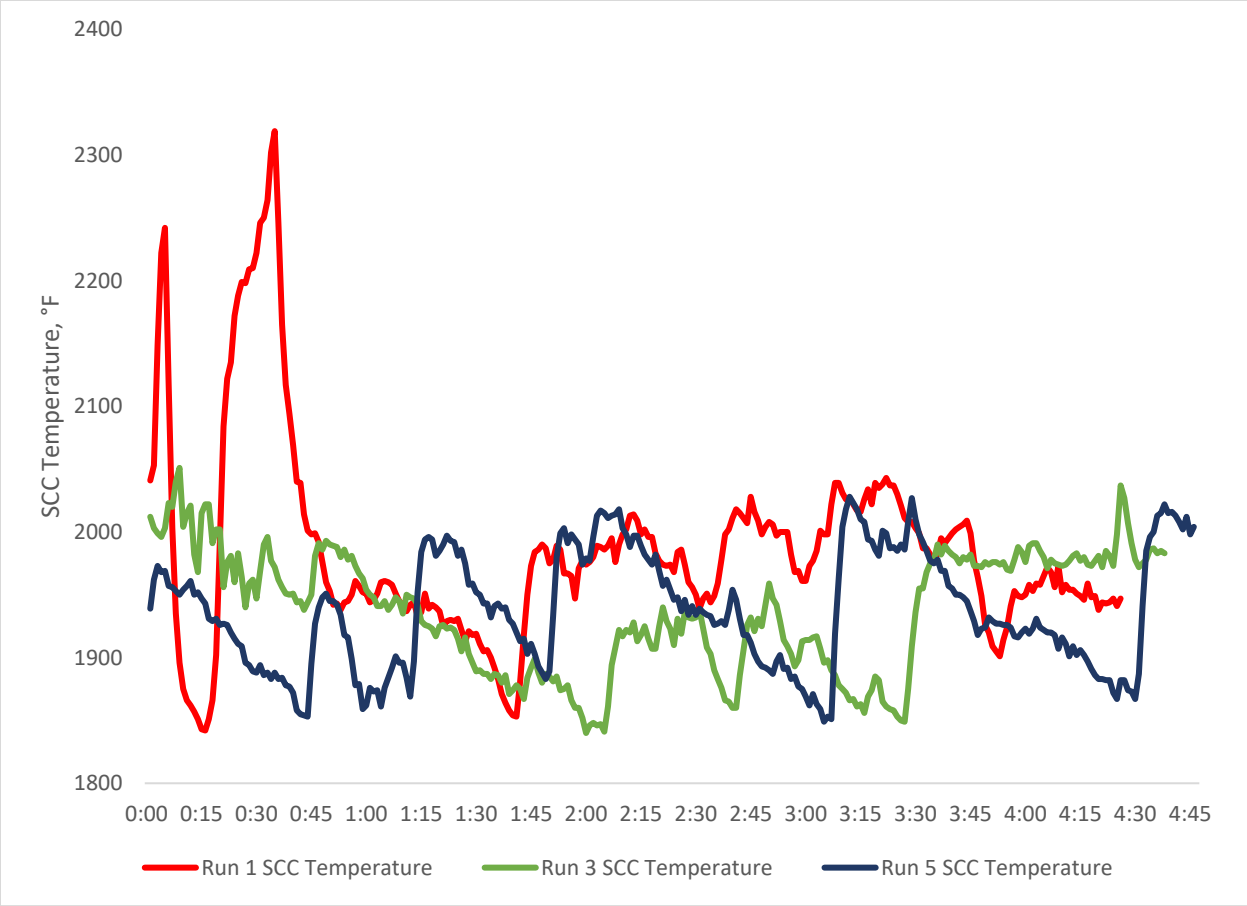

Figure 4-2. MCF SCC Temperatures During Sampling

Table 4-18 provides a summary of the operations data collected for each test run 1, 3, and 5. All values in this table represent an average taken over the duration of each test run. While the MCF does use a belt scale to measure the rate material is fed into the kiln, that scale does not provide consistent accurate readings at these lower feed rates. Measured weights and calculations of the number of loader buckets of material placed into the feed hopper over a known period of time were used to establish a relatively consistent feed rate of nominally 3.5 tons per hour (tph) into the kiln.

Table 4-19. Average MCF Operations Data During Sampling

Parameter	Run 1	Run 3	Run 5
Afterburner Temp (°F)	1988	1937	1938
Stack Temp (°F)	157	159	159
CO Level (0-200 ppm)	0.89	1.26	2.16
O2 Level (0-25%)	15.8	12.5	11.5
Feed Rate (tph)	3.5	3.5	3.5

4.5.2 Soil Treatment Results

Because of the timing of the test, it was not possible to evaluate multiple sources of PFAS-contaminated soil to select soil characteristics or levels of contamination based on how these parameters would impact the test. The MCF had received and had prepared a volume of PFAS-contaminated soil, received from multiple sources, for thermal treatment that was above the Alaska Department of Environmental Conservation (ADEC) clean-up levels (CULs) for regulated PFAS compounds (ADEC CULs are presented in Table 4-19.) It was this soil the MCF received that was used for this test program. Analyses of the soil by EPA showed that PFOS was the highest concentration of any one PFAS compound with levels ranging from 0.01 to 1.40 mg/kg, with most sources being on the lower end of that range. As EPA's single pretreatment soil sample results show, as presented previously as Table 4-16, the pretreatment levels for the ADEC regulated compounds were much lower by several orders of magnitude than the levels observed by NRC. In fact, several PFAS compounds were already found at levels lower than ADEC CULs. PFOS was the only compound measured above the RL, present at 1.46 µg/kg (0.00146 mg/kg), above the ADEC CUL, but well below the levels expected.

It is unknown how representative the sample collected for EPA was in relation to the overall feed material, and more specifically, in relation to the feed material treated during emissions testing. The collection of representative soil samples – pre- and post-treatment – was particularly difficult due to the conditions and resulted in random grab samples. The soil piles were largely frozen and only locations where samples could be scraped at the surface were able to be collected. It is reasonable to assume that EPA's measured pretreatment soil levels are likely to represent the lower end of the true levels or concentrations. As a result, the NRC anticipated levels should be considered when interpreting results as well.

Table 4-20. ADEC PFAS Cleanup Levels

Compound	CAS Number	Soil Migration to Groundwater (mg/kg)
Perfluorobutane Sulfonic Acid (PFBS)	375-73-5	1.4
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.00024
Perfluorohexane Sulfonic Acid (PFHxS)	355-46-4	0.00029
Perfluorononanoic Acid (PFNA)	375-95-1	0.00041
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	0.00053
Perfluorooctanoic Acid (PFOA)	335-67-1	0.00029

The post-treatment soil sample results were previously presented in Table 4-17. As can be seen, all post-treatment soil sample results (stakes 66-70) met ADEC's CULs. *As a result, all soil fed during testing, regardless of PFAS contamination level, was effectively and successfully treated.*

4.5.3 DRE Results

AST calculated DREs by using the mass concentrations of the single, pre-treated soil sample and the targeted PFAS emissions results from the Runs 1,3, and 5 modified Method 0010 emission samples. There was one (1) pre-treated sample, five (5) post-treated samples, a (1) sample from the baghouse, scrubber water, fresh water, and three (3) air emission samples. Post-treated soils, the baghouse, scrubber water, and freshwater samples were not included in the DRE calculations. Tables 4-20 and 4-21 present the PFAS emissions rates for each run, including and excluding the XAD-2 fraction, respectively. The average PFAS emission rate was used to perform the DRE calculations. The soil PFAS mass feed rate was calculated by converting µg/kg results to mg/ton. These concentrations were multiplied by the estimated operational tonnage rate of 3.5 tons/hr, resulting in mg/hr. The PFAS mass emission rates and PFAS soil mass feed rates were then multiplied by the sampling time of 4 hours providing total mgs for each. The percent destruction was calculated by dividing the pretreated soil mgs minus the exhaust mgs by the total mgs in the pretreated soil. This was multiplied by 100 to give the DRE percentage. Table 4-22 presents the DRE results, with and without the XAD-2 fractions included. For more detailed calculations, please refer to the AST emissions test report, which is included in Appendix A.

As noted previously, ORD's pretreated soil results for PFAS compounds were much lower than anticipated. The highest PFAS concentration measured for any compound was 1.46 µg/kg for PFOS (all the remaining that were detected were estimated concentrations between the MDL and RL). Even at these low levels, effective DREs were observed. The ≥ 99.9% DRE for PFOS should be considered most representative of MCF performance and these tests. The PFOS level in the pretreated soil was measured above the RL and the PFOS contamination in the XAD-2 was minimal for that compound. *As a result, even with the PFOS contamination included, a DRE of 99.9% was achieved. The excellent in-stack modified Method 0010 measurement sensitivities were sufficient to calculate > 99% DREs for some of the PFAS compounds below soil RLs.* The destruction and removal of PFOS or other targeted compounds is not an indication of the presences or absence of PFAS products of incomplete combustion.

Table 4-21. Summary of PFAS Emissions Rates Including XAD-2 Traps

Analyte	Run 1	Run 2	Run 3	Average
	mg/hr	mg/hr	mg/hr	mg/hr
Perfluorobutanoic acid (PFBA)	0.0392	0.0328	0.0139	**0.0286**
Perfluoropentanoic acid (PFPeA)	0.0085	0.0064	ND	**0.0050**
Perfluorohexanoic acid (PFHxA)	0.2196	0.1798	0.0052	**0.1349**
Perfluoroheptanoic acid (PFHpA)	0.3196	0.2813	0.0049	**0.2019**
Perfluorooctanoic acid (PFOA)	0.1247	0.1047	0.0084	**0.0793**
Perfluorodecanoic acid (PFDA)	0.1113	0.0915	ND	**0.0676**
Perfluorobutanesulfonic acid (PFBS)	0.0270	0.0229	ND	**0.0167**
Perfluorooctanesulfonic acid (PFOS)	0.0078	0.0065	ND	**0.0048**
Perfluorooctanesulfonamide (FOSA)	ND	0.0032	ND	**0.0011**
6:2 FTS	0.0038	0.0028	ND	**0.0022**
8:2 FTS	0.0104	0.0024	0.0035	**0.0055**
HFPO-DA (GenX)	0.0188	0.0188	0.0261	**0.0213**

Table 4-21. Summary of PFAS Emissions Rates Excluding XAD-2 Traps

Analyte	Run 1	Run 2	Run 3	Average
	mg/hr	mg/hr	mg/hr	mg/hr
Perfluorobutanoic acid (PFBA)	0.0022	0.0022	0.0037	**0.0027**
Perfluorooctanoic acid (PFOA)	0.0093	0.0082	0.0048	**0.0074**
Perfluorooctanesulfonamide (FOSA)	ND	0.0032	ND	**0.0011**
6:2 FTS	0.0038	0.0028	ND	**0.0022**
8:2 FTS	0.0104	0.0024	0.0035	**0.0055**
HFPO-DA (GenX)	0.0033	0.0079	0.0103	**0.0072**

Table 4-23. Summary of PFAS DREs

Analyte	Pre-Treated Soil		Average PFAS Emission Results				DRE	
			XAD excluded		XAD included		XAD excluded	XAD included
	mg/hr	mg	mg/hr	mg	mg/hr	mg	%	%
Perfluorobutanoic acid (PFBA)	0.3810	1.5241	0.0027	0.0109	0.0286	0.1145	99.29%	92.49%
Perfluoropentanoic acid (PFPeA)	0.8922	3.5689	ND	ND	0.0050	0.0199	100.00%	99.44%
Perfluorohexanoic acid (PFHxA)	0.7049	2.8195	ND	ND	0.1349	0.5395	100.00%	80.87%
Perfluoroheptanoic acid (PFHpA)	0.5588	2.2353	ND	ND	0.2019	0.8078	100.00%	63.86%
Perfluorooctanoic acid (PFOA)	0.7557	3.0227	0.0074	0.0296	0.0793	0.3171	99.02%	89.51%
Perfluorononanoic acid (PFNA)	0.2531	1.0122	ND	ND	ND	ND	100.00%	100.00%
Perfluorodecanoic acid (PFDA)	0.0794	0.3175	ND	ND	0.0676	0.2705	100.00%	14.81%
Perfluoroundecanoic acid (PFUnA)	0.1664	0.6655	ND	ND	ND	ND	100.00%	100.00%
Perfluorobutanesulfonic acid (PFBS)	ND	ND	0.0011	0.0043	0.0167	0.0666	N/A	N/A
Perfluoropentanesulfonic acid (PFPeS)	0.0730	0.2921	ND	ND	ND	ND	100.00%	100.00%
Perfluorohexanesulfonic acid (PFHxS)	1.0510	4.2039	ND	ND	ND	ND	100.00%	100.00%
Perfluorooctanesulfonic acid (PFOS)	4.6992	18.7969	ND	ND	0.0048	0.0191	100.00%	99.90%
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	0.0011	0.0043	N/A	N/A
6:2 FTS	ND	ND	0.0022	0.0089	0.0022	0.0089	N/A	N/A
8:2 FTS	1.6066	6.4265	0.0055	0.0218	0.0055	0.0218	99.66%	99.66%
HFPO-DA (GenX)	ND	ND	0.0072	0.0287	0.0213	0.0850	N/A	N/A

5.0 Conclusions and Implications for Future Research

5.1 Conclusions

The October 2019 emissions tests were intended to apply and evaluate multiple emission measurement approaches that could be used to comprehensively characterize the emissions from an AFFF-contaminated soil thermal treatment facility, including potential PICs through the application of nontargeted analyses.

The viability of the modified Method 0010 sampling train to quantitatively measure a group of 36 specific PFAS compounds was successfully demonstrated. Most importantly, this study included the first ever demonstration of incorporating PSS as a means to assess overall quantitative measurement quality. PSS recoveries averaged 100.3% and 70.3% for PFOA and PFOS respectively. Moreover, there was no evidence of these PFAS compounds migrating from the XAD-2 to the impingers during sampling, even in an extremely high moisture environment. *It is because of these results EPA is able to proceed with the preparation of a formal test method for quantitative, targeted PFAS emissions measurements.* This method has been identified as OTM-45. OTM-45 is expected to be posted by EPA's Office of Air Quality Planning and Standards (OAQPS) by the end of the calendar year on their website. *Although the confirmed XAD-2 contamination was a confounding factor to targeted PFAS emissions test results, the contamination did not compromise the conclusions drawn from this study.*

The Method 0010 sampling train nontargeted analyses were not performed at this time. As a result, the comprehensive PIC characterization was also not performed and not available at this time. The results of the nontargeted analyses, including characterization of PICs, will be the subject of a supplement to this report provided at a later date.

The modified Method 0010 sampling train combined with the associated sample train fraction analytical preparation and targeted isotope dilution analyses RL and MDLs were used to calculate estimated in-stack measurement method reporting and detection limits for individual PFAS compounds. *Overall, these estimated in-stack measurement limits serve to indicate the excellent sensitivity of the intended method.* These estimated in-stack measurement limits are important for emissions testing planning. For example, they are helpful for the estimation of potential DREs. Based on representative PFAS waste feed treatment rates, stack volumetric exhaust rates, etc., DRE estimates of 5-6 "nines" (99.999-99.9999%) are possible.

The uncertainty of the actual AFFF-contaminated feed soil PFAS levels is a confounding factor to overall data interpretation but does not compromise study conclusions. NRC indicated individual PFAS levels on the order of 1000 µg/kg have been observed and were expected. From the single, pre-treatment soil sample, the highest PFAS concentration measured for any compound was 1.46 µg/kg for PFOS (all the remaining detected were estimated concentrations between the MDL and RL). *Regardless of this low AFFF-contaminated feed soil level, the targeted PFAS measurements for the modified Method 0010 sampling approach were sufficiently sensitive to determine a PFOS DRE >99.9%, even with the contaminated XAD-2 included*. The destruction and removal of PFOS or other targeted compounds is not an indication of the presence or absence of PFAS products of incomplete combustion. These results cannot be extrapolated to a higher AFFF-contaminated feed soil levels and further testing is needed to

verify DRE performance at those levels. All post-treatment soil sample results, representing all soil treated during the study, met ADEC CULs for PFAS compounds.

The modified Method 18 PFAS sampling train, adapted to collect polar, PFAS compounds for conceptual TOF analyses, was only marginally successful, largely due to the applied method's overall lack of measurement sensitivity. The method, as applied, was not optimized for measurement sensitivity. There are still options for improving overall measurement sensitivity by several orders of magnitude, including sample concentration and improved analytical sensitivity. It is uncertain whether overall measurement sensitivity can be improved comparable to that of the Method 0010 in-stack levels reported above, but this should at least be the goal going forward. A TOF emissions measurement method is critical tool required to support PFAS thermal treatment process performance evaluations in addition, or even as an alternative, to comprehensive PIC characterization.

With respect to the overall emissions characterization, it is suspected the very low AFFF-contaminated feed soil levels contributed to the result that the majority of emissions measurements were either non-detect or at or near the measure method MDLs and RLs. Because of the uncertainty of the actual AFFF-contaminated feed soil PFAS levels, it cannot be determined at this time whether the relatively low emission levels observed were a result of the thermal treatment technology's performance or simply there was not enough PFAS material in the feed soil to result in measurable emissions levels. Planning assumed PFAS soil levels would be in the range of 1000 µg/kg. *Additional testing at higher, representative and intended AFFF-contaminated feed soil PFAS levels is needed to effectively conduct the desired comprehensive emissions characterization.*

5.2 Implications for Future Research

An assessment of the thermal treatment technology, including AFFF-contaminated soil treatment effectiveness, was not a focus of the October 2019 study. A formal technology demonstration test should be conducted that addresses the quantitative effectiveness of the soil treatment technology as well as a comprehensive emission characterization, while treating the range of expected waste characteristics anticipated. Specifically, the primary data needs from a formal demonstration test include the effectiveness/residual levels that the AFFF contaminated soil can be treated, that all PFAS are completely destroyed and controlled and the levels and amounts of PFAS, including PICs, that can be potentially be discharged to air, soil and water.

5.2.1 Research Questions to be Answered

Research questions to be answered in future tests:

- To what residual PFAS levels can AFFF-contaminated soils be effectively thermally treated by the Moose Creek thermal treatment facility?
- Are target PFAS compounds emitted to the air?
- Are PFAS compounds completely destroyed as evidenced by the non-presence of PICs in air emissions?
- What are the potential process discharges (e.g., dust/particulate matter, scrubber liquids/solids, etc.) and what are the associated residual PFAS levels?
- What are the AFFF-contaminated soil thermal treatment costs?

5.2.2 Recommended Approaches to Address Research Questions

In order to answer the identified research questions, the following recommendations should be considered:

- Ensure adequate amount of PFAS contamination in soil.
    - ~1000µg/kg (1mg/kg) will allow DREs of 5-6 nines and will enable more comprehensive PIC characterizations
- Characterize soil prior to actual TD testing
    - Measure the contamination levels
    - Ensure/confirm that the soil tested is homogenous or mixed to be as homogenous as possible
    - Characterize the soil for polar (i.e., PFAS water compounds) and nonpolar (i.e., FTOHs) PFAS compounds
    - Characterize the soil by nontargeted analyses
    - If possible, perform TOF soil analyses
- Develop a soil sampling strategy for ensuring samples collected are representative
    - Follow or develop specific sampling guidance/documentation
    - Pre-treated soil:
        - Sample homogenized "pile" representatively pre, during, post testing
        - Sample soil being fed to kiln representatively at time intervals commensurate with emissions testing (e.g., from the soil conveyor belt)
    - Sample post-treated sample representatively
    - Collect additional samples for archive and NTA purposes
- Apply emissions sampling for targeted PFAS compounds including polar PFAS compounds (e.g., EPA Method PFAS compounds in water) as well as nonpolar FTOHs, both of which are present in AFFF, for DRE purposes.
- Ensure comprehensive collection of appropriate blank samples to aid in data interpretation and validation.
- Assess the quantitative complete destruction of PFAS compounds thermally released during soil treatment (more than just target compound DE)
- Comprehensively characterize the process emissions, including specifically for potential PICs
- Determine temperatures and residence times for gases in the afterburner section.
- If possible, collect emissions samples at multiple sampling locations including between the primary kiln and the afterburner, between the afterburner and the baghouse, between the baghouse and scrubber and at the stack.
- Include emissions testing of simple to measure compounds, such as CF4 and C2F6, that may serve as indicators of thermal destruction of PFAS compounds as a class.
- If possible, include TOF emissions measurements with sufficient sensitivity to provide meaningful RLs and MDLs relative to targeted PFAS emissions measurements
- If possible, incorporate a sampling plan designed to close the mass balance.

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Appendix B to 40 CFR Part 136 - Definition and Procedure for the Determination of the Method Detection Limit
https://ecfr.io/Title-40/Part-136/Appendix-B#40:25.0.1.1.1.0.1.8.2

ER19-1408
In Progress
Analysis of Fate of PFAS during Incineration
Brian Gullett I U.S. EPA
Final Report
NRC AK- SERDP Report - Draft 7-31-2020
Final Report 8/18/2020 1 :34 PM (ET) 1.80 MB
Document Comments

Revision Requested

Thank you for submitting the Final Report; comments are provided below. Please review these comments and provide a response to each in SEMS. Responses should include a discussion of the comment as well as a notation as to how the comment was incorporated into the revised document. Once the document is updated, submit the revised version to the Program Office under the (V2) task in SEMS.

If you have any questions regarding this review, contact Andrea at Andrea.Leeson.civ@mail.mil.

Response

Thank you for the constructive comments and feedback. I have responded as requested, providing responses here to the individual comments, including how I incorporated my response in the revised report. Again, thank you for the opportunity to conduct this mutually beneficial research.

Executive Summary and Section 5.0 Conclusions and Implications for Future Research

One of the biggest concerns with the current write-up and the outcome of this project is the discrepancy between the technical objectives of the project cited in Section 1.2 and the efforts that went in to addressing the objectives as part of the overall sampling and characterization effort. As stated in Section 1.2, the two primary objectives were:

1) evaluate the performance of the modified source emission methods for PFAS as it applies to thermal treatment sources and

2) conduct a comprehensive mass balance across a thermal treatment train to understand the thermal behavior during the treatment process with particular focus on identifying products of incomplete combustion (PIC) generation.

We believe the second objective is missed here. While the team sampled pre-treated soil and then sampled the scrubber exhaust, the choice of sampling location did not allow an understanding of what is happening during the thermal treatment process, especially with respect to PIC generation. There were multiple unit operations between kiln feed and the stack as shown in Figure 2-1, and the operations of each of these individual units would

influence the thermal treatment of the PFAS media let alone the formation of PICs and other residual compounds, which were necessary to quantify in order to satisfy the research objectives. Ideally, samples should be taken after the afterburner but before the scrubber and then at the stack at the very least, or even better if sampled at these three locations: (i) between the primary kiln and the afterburner, (ii) between the afterburner and the baghouse and then at the {iii) stack. Please discuss how this data gap might influence some of the outcomes and conclusions of this report as well as what future research and characterization work is needed to address this specific concern.

Response

This comment is actually multiple comments based on the premise that the secondary objective as stated by the commenter was to *"conduct a comprehensive **mass balance across a thermal treatment train** to understand the thermal behavior during the treatment process with particular focus on identifying products of incomplete combustion (PIC) generation"* when actually the secondary objective was to *"conduct a **comprehensive PFAS emissions characterization from a representative thermal treatment process** to improve the understanding of the thermal behavior of PFAS compounds with a primary focus on the potential for PIC formation."*

Conducting a fluorine mass balance was never the intent of this study, nor was evaluation of the thermal treatment process itself, especially with respect to the emissions at the three locations: (i) between the primary kiln and the afterburner, (ii) between the afterburner and the baghouse and then at the {iii) stack. I would not necessarily consider this a data gap, at least not from an emissions standpoint, though control of potential PFAS emissions across the various devices may be of potential interest. As a result, no further discussion of such a data gap and its implications has been added to the conclusions section of the report. However, a recommendation to consider adding these measurements and their purpose has been incorporated into section 5.2 Implications for Future Research.

Overall, the primary data needs are the effectiveness/residual levels that the AFFF contaminated soil can be treated, that all PFAS are completely destroyed and the levels and amounts PFAS can be potentially be discharged to air, soil and water. This has also been added to section 5.2 Implications for Future Research.

The commenter does correctly point out that the second objective is largely missed here and is a comment common to several reviewers. However, the common comment is with respect to the comprehensive PIC characterization which indeed was not accomplished. This issue has been addressed through revisions to the report and discussed in further detail below.

Objectives

More explicitly discuss the second objective in the report. It is necessary to simply state it could not be met at this time. The report is focused principally on the first objective and is relatively silent on the second objective.

Response

This comment is related to the common comment that the second objective for comprehensive PIC characterization was largely not addressed. As described in separate comment responses, Section 4.1.4 Nontargeted PFAS Emissions Data has been added to document and discuss the absence of the Method 0010 polar and nonpolar nontarget analyses.

In addition, Section 5.0 Conclusions and Implication for Future Research has been revised to discuss the impact of the nontargeted analyses not being available on the PIC characterization, including correcting the inaccurate statement of the PIC characterization also being successful.

Nontargeted Analysis

The report must discuss the absence of results for the testing identified in Sections 3.1 .1 and 3.1.3 with respect to nontargeted analysis. Results for nontargets (PICs) are not included in the report for Trains 2, 4, and 6 and only targeted analysis results are provided with respect to SUMMA canister results. The absence of this data needs to be explained. In addition, in their absence, it is not possible to support the conclusion, 'The October 2019 emissions tests were intended to apply and evaluate multiple emission measurement approaches that could be used to comprehensively characterize the emissions from an AFFF-contaminated soil thermal treatment facility, including potential PICs. This was successfully accomplished." made in Section 5.0 Conclusions and Implication for Future Research). In addition, this section should draw conclusions on the use of the procedures described in Section 3.1 .2 for TOF.

Response

Section 4.1.4 Nontargeted PFAS Emissions Data has been added to document and discuss the absence of the Method 0010 polar and nonpolar nontarget analyses.

In addition, Section 5.0 Conclusions and Implication for Future Research has been revised to discuss the impact of the nontargeted analyses not being available on the PIC characterization, including correcting the inaccurate statement of the PIC characterization also being successful.

The modified Method 18 PFAS sampling train, adapted to collect polar, PFAS compounds for conceptual TOF analyses, was only marginally successful, largely due to

the applied method's overall lack of measurement sensitivity. The method, as applied, was not optimized for measurement sensitivity. There are still options for improving overall measurement sensitivity by several orders of magnitude, including sample concentration and improved analytical sensitivity. It is uncertain whether overall measurement sensitivity can be improved comparable to that of the Method 0010 in-stack levels reported above, but this should at least be the goal going forward. A TOF emissions measurement method is critical tool required to support PFAS thermal treatment process performance evaluations in addition, or even as an alternative to comprehensive PIC characterization. This information was included as a revision to Section 5.0 Conclusions and Implication for Future Research.

MDLs and RLs

Please discuss how the MDLs and RLs were determined and verified for each analysis. The only information relative to this is with respect to modified Method 0010 ("Tables 4-5 through 4-8 present estimated in-stack emissions RLs and MDLs based on TA's RLs and MDLs for each Modified Method 0010 train fraction.").

Response

Reporting Limits (RLs) and Method Detection Limits (MDLs) were determined and reported by Test America. RLs are the lowest quantitative levels that can be reported and are based on the lowest calibration standard. RLs are reported for each individual sample fraction and are adjusted for individual final sample volumes. MDLs are derived from a formal MDL study, specific to each sample fraction or type (e.g., filter, XAD-2, impinger contents). The MDL study followed the approach found in Appendix B to 40 CFR Part 136 - Definition and Procedure for the Determination of the Method Detection Limit. The method detection limit (MDL) is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. The MDL is established by processing a minimum of seven spiked samples and seven method blank samples through all steps of the analytical method and determining the statistical MDL value. MDLs were determined for each sample fraction and MDLs are reported for each individual sample fraction and adjusted for individual final sample volumes.

This language was added to Section 4.1.1.

Section 4.1.2: Data Quality Issues (Blank Contamination)

Discuss the possible root causes of the blank contamination associated with the XAD-2 sampling media and the potential path forward.

Response

After consultation with TA, the source of the XAD-2 contamination was attributed to the XAD-2 manufacturer. The XAD-2 sampling material is commonly purchased from the

supplier precleaned for use. However, a contamination was found to be present even after TA's cleaning process. As the use of XAD-2 for trace level PFAS emissions measurements was an emerging need at the time of these tests, the process for achieving background PFAS levels below MDLs had not been established. The process has now been established and XAD-2 sampling material is now commonly available with background PFAS levels below MDLs.

Section 4.1.2 has been revised to reflect the above.

Section 4.2: Modified Method 18 HF and TF Results

Include the blank train condensate results.

Response

An additional table has been included (Table 4-11) that presents the measured F sample masses for Runs 1-3 as well as the field blank.

Section 5.1: Conclusions

Because of the very low PFAS concentration in feedstock used for the run, these results cannot be scaled up for highly concentrated wastes; therefore, the statement that "based on a nominal AFFF-contaminated soil level of 1000 ug/Kg (for any individual PFAS compound), DRE calculated estimates of 5-6 nines (99.999-99.9999%) are possible" could be misleading. It would be best to state that the results cannot be extrapolated to a highly concentrated waste and that further testing is needed.

Response

This is an excellent comment and understandably somewhat confusing. The primary intent was to indicate that the modified Method 0010 sampling train and associated targeted PFAS analyses were of sufficient sensitivity to enable high quality DRE determinations and were not meant to be an extrapolation of actual DRE performance at higher AFFF soil contamination levels. Section 5.1 Conclusions and the Executive Summary were revised to make this clarification. A statement that "These results cannot be extrapolated to higher AFFF-contaminated feed soil levels and that further testing is needed to verify DRE performance" was also included.

Section 5.2: Implications for Future Research

It is stated in this section that the focus of this study was not to evaluate the effectiveness and hence the efficiency of the thermal treatment; however, in Section 1.2, one of the primary objectives is to evaluate the behavior of thermal treatment and hence its efficiency. It should be sufficient in this section to state what could and could not be done, and therefore, what would be needed in the future.

Response

Further discussion and clarification were added to Section 5.1 Conclusions and Section 5.2 Implications for Future Research to clarify what was accomplished, not accomplished and what research/testing elements are necessary going forward.

Section 5.2.2: Recommended Approaches to Address Research Questions

We recommend the following additions to this section based on the results:
1. Soil evaluation: prior to actual TD testing and post treatment soil evaluation should specify the contamination relative to targeted and nontargeted compounds.
2. TOF: Develop a method to evaluate TOF that has MDL and Rls that are relevant to this application. Ensure blanks are included in this analysis, see previous issues relating to Section 4.2.
3. Execute a sampling plan designed to close the mass balance.

Response

Section 5.2.2. was revised to include the above recommendations.

APPENDIX A: Alaska Source Testing Emissions Test Report

Summary Report
U.S. Environmental Protection Agency
National Response Corporation Alaska, LLC.
Moose Creek Facility
Research and Development Testing
PFAS Destruction Analysis

Prepared for:

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Office of Research and Development
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Prepared by:

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May 8, 2020

Report Certification

As principal project scientist and Project Manager, I certify that the testing was performed in accordance with approved methods and the data, calculations, and results described in this report are true and accurate to the best of my knowledge.

W.M. Hudson
Project Manager / President

Signature

5/11/20
Date

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1 Introduction

National Response Corporation Alaska, LLC (NRC) contacted the U.S. Environmental Protection Agency (EPA) Office of Research and Development (ORD) in early 2019 and offered to make their thermal treatment facility located in North Pole, Alaska available for air emissions testing and research while the facility is actively remediating soils contaminated with Per and Polyfluoroalkyl Substances (PFAS). NRC coordinated with EPA to develop an intitial research testing plan and to identify additional technical support needed to collect and process air emissions samples. The EPA commissioned Alaska Source Testing LLC and Eurofins TestAmerica Knoxville (TestAmerica) to quantify PFAS in the facility exhaust during what would be considerd “normal operations” while treating typical PFAS-contaminated soil. The facility has been approved to remediate PFAS contaminated soils by the Alaska Department of Enviromental Conservation (ADEC).

NRC purchased Organic Incineration Technology Incorporated (OIT) Moose Creek Facility (MCF) in April of 2019. In 2019 the MCF secured the approvals necessary to thermally remediate contaminated soil containing PFAS. PFAS have many classes. Key classes of concern are perfluoroalkyl carboxylic acids (PFCAs) such as PFOA, and perfluoroalkyl sulfonic acids (PFSAs) such as PFOS. A full-scale test trial was completed in May 2018 that demonstrated the MCF could successfully reduce PFAS in the soil to levels below State of Alaska regulatory limits with only trace amounts being emitted from the exhaust stack. In May of 2019 a second test was performed to demonstrate compliance with the new air permit.

At this time, there are no approved finalized EPA test methods for measuring PFAS in the exhaust of the soil remediation unit. There are EPA-approved laboratory procedures for measuring PFAS in water and modified methods that are capable of measuring PFAS in solids.

Mr. Bill Hudson, AST President, was the on-site Project Manager for the source test and was assisted by AST technician Chase Aikey and Doug Cahill of TestAmerica. Jeff Ryan of the U.S. EPA was the on-site U.S.EPA test manager. Billy Anderson was the TestAmerica project manager. Paul McGuire was the on-site project manager for NRC.

PFAS concentrations were measured using three different field test methods as follows: Modified Method 0010 (MM-5) Sampling Train - Method for Determining HFPO-DA and Other Method 537 PFAS compound Emissions in Stack Gas; Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas; and Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters. This report only includes runs 1, 3, and 5 which used the MM-5 sample train to produce samples for lab testing using modified Method 537 for PFAS analytes. Runs 2, 4, and 6 were analyzed using different lab methods to test for non-targeted analytes and the field data and lab results are not included in this report.

AST prepared an additional report that includes field data collected and lab results for runs 2,4 and 6 as well as the modified Method 18 test. Results of the SUMMA Canisters were not provided to AST and therefore are not included in either report.

MM-5 references USEPA Methods 1-5 for measuring stack velocity, oxygen and carbon dioxide content, moisture content, and determination of iso-kinetic sampling.

All test procedures used for this testing, when possible, were performed in accordance with EPA Reference Methods as prescribed in Title 40 of the Code of Federal Regulations Part 60 (40 CFR 60). Detailed test information and documentation is provided in the appendices of this report.

This report will be included in a larger report being produced by the USEPA that includes the overall objectives and results of the testing program.

2 Summary of Results

Detailed calculations and spreadsheets are provided in Appendix A. Contained in the tables below are the results of air emission analysis for PFAS analytes, expressed in milligrams and pounds per hour, using stack exhaust volumes and lab sample analysis. The results are presented with and without the XAD traps analytes hits because of numerous XAD blank hits. There were also 1 hit for PFOA, 3 hits for PFBA, and 1 hit for GenX from other field blanks that were included in the results. Additionally, a percent destruction table is included based on a pre-burn soil sample, post-burn soil samples and stack exhaust concentrations. There is also a comparison of results to previous PFAS testing and comparisons of sample results with blank samples for quality assurance. The comprehensive blank sample comparisons are located in Appendix A. TestAmerica performed a resin media check prior to loading the XAD traps. This blank check was not considered in the results calculations.

2.1 Modified Method 0010 (MM-5) Stack Exhaust DATA

Table 2-1 Summary of Calculations

Date	Start and Stop times	Run	Sample Volume at Standard conditions, ft^3	Standard Stack Gas Volumetric Flow, ft^3/min	Iso-kenetics, %
10/13/2019	13:15 - 17:40	1	121.76	4336.03	99.76
10/14/2019	16:30 - 21:07	3	152.56	4712.10	115.02
10/16/2019	12:00 - 16:45	5	153.44	5383.06	101.26
		Average	**142.59**	**4810.39**	**105.35**

Table 2-2 O_2/CO_2 Summary of Results

Run	Date	CO_2, %	O_2, %
1	10/13/2019	6.15	12.39
3	10/14/2019	6.56	11.91
5	10/16/2019	6.68	11.70
Average		**6.47**	**11.98**

2.2 PFAS results

TestAmerica Laboratory tested air emission samples for 29 compounds. Please see Appendix A, Spreadsheets and Example Calculations, and Appendix D, Laboratory reports, for the full list of results. Only the analyte hits are shown below in Tables 2-3 and 2-4.

Table 2-3 Summary of PFAS Calculations Including XAD Traps

Analyte	Total							
	Run 1		Run 3		Run 5		Average	
	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr
Perfluorobutanoic acid (PFBA)	0.0392	8.64E-08	0.0328	7.23E-08	0.0139	3.06E-08	**0.0286**	**6.31E-08**
Perfluoropentanoic acid (PFPeA)	0.0085	1.87E-08	0.0064	1.42E-08	ND	ND	**0.0050**	**1.10E-08**
Perfluorohexanoic acid (PFHxA)	0.2196	4.84E-07	0.1798	3.96E-07	0.0052	1.15E-08	**0.1349**	**2.97E-07**
Perfluoroheptanoic acid (PFHpA)	0.3196	7.05E-07	0.2813	6.20E-07	0.0049	1.08E-08	**0.2019**	**4.45E-07**
Perfluorooctanoic acid (PFOA)	0.1247	2.75E-07	0.1047	2.31E-07	0.0084	1.86E-08	**0.0793**	**1.75E-07**
Perfluorodecanoic acid (PFDA)	0.1113	2.75E-07	0.0915	2.31E-07	ND	ND	**0.0676**	**1.75E-07**
Perfluorobutanesulfonic acid (PFBS)	0.0270	5.96E-08	0.0229	5.05E-08	ND	ND	**0.0167**	**3.67E-08**
Perfluorooctanesulfonic acid (PFOS)	0.0078	1.71E-08	0.0065	1.44E-08	ND	ND	**0.0048**	**1.05E-08**
Perfluorooctanesulfonamide (FOSA)	ND	ND	0.0032	7.07E-09	ND	ND	**0.0011**	**2.36E-09**
6:2 FTS	0.0038	8.48E-09	0.0028	6.25E-09	ND	ND	**0.0022**	**4.91E-09**
8:2 FTS	0.0104	2.30E-08	0.0024	5.35E-09	0.0035	7.70E-09	**0.0055**	**1.20E-08**
HFPO-DA (GenX)	0.0188	4.15E-08	0.0188	4.15E-08	0.0261	5.76E-08	**0.0213**	**4.69E-08**

*Listed above are the analytes that had hits in the laboratory report

Table 2-4 Summary of PFAS Calculations- excluding XAD Traps

Analyte	Total excluding XAD Traps							
	Run 1		Run 3		Run 5		Average	
	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr
Perfluorobutanoic acid (PFBA)	0.0022	4.85E-09	0.0022	4.90E-09	0.0037	8.21E-09	**0.0027**	**5.99E-09**
Perfluorooctanoic acid (PFOA)	0.0093	2.04E-08	0.0082	1.80E-08	0.0048	1.05E-08	**0.0074**	**1.63E-08**
Perfluorooctanesulfonamide (FOSA)	ND	ND	0.0032	7.07E-09	ND	ND	**0.0011**	**2.36E-09**
6:2 FTS	0.0038	8.48E-09	0.0028	6.25E-09	ND	ND	**0.0022**	**4.91E-09**
8:2 FTS	0.0104	2.30E-08	0.0024	5.35E-09	0.0035	7.70E-09	**0.0055**	**1.20E-08**
HFPO-DA (GenX)	0.0033	7.35E-09	0.0079	1.73E-08	0.0103	2.27E-08	**0.0072**	**1.58E-08**

*Listed above are the analytes that had hits in the laboratory report

Below, in Table 2-5, are the results of the hits in the quality assurance blank air samples compared to the air emission sample results. It should be noted to not confuse the results below with the PFAS results above. The below are the results directly from the TestAmerica Laboratory reports and do not contain the PFAS calculations from Table 2-3 and 2-4. AST believes there is inconsistency and possible contamination in blank results, which might indicate possible contamination in the air emission samples. Highlighted in red in the below table are the XAD trap samples.

Table 2-5 Quality Assurance Blank Hits Comparison

M0010 Filter, M0010 FH of Filter Holder and Probe MeOH Rinse	**Quality Assurance Blanks**		**Air Emission Samples**		
Analyte	**A-6601, 6602**	**A-6608,6609**	**Run 1**	**Run 3**	**Run 5**
	QC M0010 FH BT #1	**QC M0010 FH BT #2**	**E-1305, E-1306**	**E-1319, E-1320**	**A-6612, A-6613**
	ng/sample	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**
Perfluorooctanoic acid (PFOA)	1.06	ND	2.65	2.67	2.27
HFPO-DA (GenX)	ND	3.75	ND	1.45	1.25

M0010 XAD-2 Resin Tube, M0010 BH of Filter Holder and Coil Condenser MeOH Rinse	**Quality Assurance Blanks**		**Air Emission Samples**		
Analyte	**A-6603, A-6604**	**A-6610, A-6611**	**Run 1**	**Run 3**	**Run 5**
	QC M0010 BH BT #1	**QC M0010 BH BT #2**	**E-1307, E-1308**	**E-1321, E-1322**	**A-6614, A-6615**
	ng/sample	**ng/sample**	**ng/sample**	**ng/sample**	**ng/sample**
Perfluorobutanoic acid (PFBA)	10.5	2.8	8.48	7.11	2.48
Perfluoropentanoic acid (PFPeA)	1.8	ND	2.07	1.67	ND
Perfluorohexanoic acid (PFHxA)	55.1	4.51	52.6	45.7	1.38
Perfluoroheptanoic acid (PFHpA)	84.1	6.27	77.9	74.4	ND
Perfluorooctanoic acid (PFOA)	32.7	4.59	28.4	26.6	1.74
Perfluorodecanoic acid (PFDA)	28.5	2.73	26.5	24.3	ND
Perfluorobutanesulfonic acid (PFBS)	7.47	ND	6.66	5.75	ND
Perfluorooctanesulfonic acid (PFOS)	1.87	ND	1.79	1.6	ND
HFPO-DA (GenX)	5.19	ND	2.65	2.75	2.26

Table 2-5 Quality Assurance Blank Hits Comparison Continued

M0010 Impingers 1,2, and 3	Quality Assurance Blanks		Air Emission Samples		
	A-6605	A-6612	Run 1	Run 3	Run 5
Analyte	QC M0010 IMP 1,2,&3 COND BT #1 ng/sample	QC M0010 IMP 1,2&3 COND BT #2 ng/sample	E-1309 ng/sample	E-1323 ng/sample	A-6616 ng/sample
Perfluorobutanoic acid (PFBA)	2.00	3.15	ND	ND	1.77

M0010 Impinger Glassware MeOH Rinse	Quality Assurance Blanks		Air Emission Samples		
	A-6606	A-6613	Run 1	Run 3	Run 5
Analyte	QC M0010 IMP GLSWRE MEOH RINSE BT #1 ng/sample	QC M0010 IMP GLSWRE MEOH RINSE BT #2 ng/sample	E-1310 ng/sample	E-1324 ng/sample	A-6617 ng/sample
Perfluorobutanoic acid (PFBA)	ND	1.11	1.03	1.2	ND

M0010 Breakthrough XAD-2 Resin Tube	Quality Assurance Blanks				Air Emission Samples		
	A-6607	A-6615	A-6614	D-2356	Run 1	Run 3	Run 5
Analyte	QC M0010 BRKTHRGH XAD-2 RSN TB BT #1 ng/sample	QC M0100 XAD-2 RSN TB TB ng/sample	QC M0010 BRKTHRGH XAD-2 RESIN TB BT #2 ng/sample	QC M0010 XAD-2 RESIN TB TB ng/sample	E-1311 ng/sample	E-1325 ng/sample	A-6618 ng/sample
Perfluorobutanoic acid (PFBA)	9.3	9.02	1.66	2.84	8.83	9.38	2.35
Perfluoropentanoic acid (PFPeA)	2	1.86	ND	ND	1.9	1.8	ND
Perfluorohexanoic acid (PFHxA)	52.6	50.2	3.04	ND	50.2	51.3	1.1
Perfluoroheptanoic acid (PFHpA)	80.8	74.4	4.37	ND	71.7	77.4	2.32
Perfluorooctanoic acid (PFOA)	29.3	32.2	4.69	1.09	25.6	25.5	ND
Perfluorodecanoic acid (PFDA)	26.2	24.5	2.37	ND	25.6	25.1	ND
Perfluorobutanesulfonic acid (PFBS)	6.91	5.74	ND	ND	5.99	6.62	ND
Perfluorooctanesulfonic acid (PFOS)	1.63	1.88	ND	ND	1.85	1.92	ND
HFPO-DA (GenX)	5.53	4.07	39	29.4	4.59	3.16	5.26

AST calculated percent destruction by using the total milligrams of the pre-treated soil and the air emission samples. There was one pre-treated sample, five post-treated samples (stakes 66-70), a sample from the baghouse, scrubber water, fresh water, and three air emission samples. Post-treated soils, the baghouse, scrubber water, and freshwater samples were not included in the percent destruction analysis and Table 2-6 is exclusive to effluent air flow in the exhaust stack and the pre-treated soil. Please see Appendix D, Laboratory Data, to see the soil analysis from TestAmerica. Each of these categories were averaged to get one total for each. Total milligrams was calculated by using the results in µg/Kg and converting it to mg/ton. Then the samples were multiplied by the operational tonnage rate of 3.5 tons/hr, resulting in mg/hr. The sample results were then multiplied by the sampling time of 4 hours providing total milligrams. The percent destruction was calculated by dividing the total mgs in the pretreated soil by the exhaust mgs. This was multiplied by 100 to give the percentage, %. Please see Appendix A, Spreadsheets and Example calculations to see the calculations written out in mathematical form. Below, pre-treated soils and percent destruction are displayed in Table 2-6. Table 2-7 includes the post-treated soils and samples from the baghouse, scrubber water, and the fresh water on-site. Table 2-8 includes a comparison of results from previous testing. Please note, the tables below only include analytes with hits and Appendix A contains the comprehensive analyte list in the tables.

Table 2-6 Pre-treated soils and Percent Destruction

Analyte	PRE-TREATED SOIL 1	Average Air Emission Samples		Percent Destruction	
		XAD excluded	XAD included	XAD excluded	XAD included
	mg	mg	mg	%	%
Perfluorobutanoic acid (PFBA)	1.5241	0.0109	0.1145	99.29%	92.49%
Perfluoropentanoic acid (PFPeA)	3.5689		0.0199	100.00%	99.44%
Perfluorohexanoic acid (PFHxA)	2.8195		0.5395	100.00%	80.87%
Perfluoroheptanoic acid (PFHpA)	2.2353		0.8078	100.00%	63.86%
Perfluorooctanoic acid (PFOA)	3.0227	0.0296	0.3171	99.02%	89.51%
Perfluorononanoic acid (PFNA)	1.0122			100.00%	100.00%
Perfluorodecanoic acid (PFDA)	0.3175		0.2705	100.00%	14.81%
Perfluoroundecanoic acid (PFUnA)	0.6655			100.00%	100.00%
Perfluorobutanesulfonic acid (PFBS)		0.0043	0.0666	See Below[A]	See Below[A]
Perfluoropentanesulfonic acid (PFPeS)	0.2921			100.00%	100.00%
Perfluorohexanesulfonic acid (PFHxS)	4.2039			100.00%	100.00%
Perfluorooctanesulfonic acid (PFOS)	18.7969		0.0191	100.00%	99.90%
Perfluorooctanesulfonamide (FOSA)			0.0043	See Below[A]	See Below[A]
6:2 FTS		0.0089	0.0089	See Below[A]	See Below[A]
8:2 FTS	6.4265	0.0218	0.0218	99.66%	99.66%
HFPO-DA (GenX)		0.0287	0.0850	See Below[A]	See Below[A]

A: Analytes found in the results of air emissions stack testing but was not detected in the pre-burn analysis.

Table 2-7 Post-treated Soils, Baghouse, Scrubber Water, and Fresh Water

Analyte	POST-TREATED SOILS STAKES AVG	SCRUBBER WATER	FRESH WATER	BAGHOUSE
	µg/Kg	ng/L	ng/L	µg/Kg
Perfluorobutanoic acid (PFBA)	0.0475	1.75	0.935	0.043
Perfluoropentanoic acid (PFPeA)	ND	0.968	0.681	ND
Perfluorohexanoic acid (PFHxA)	0.752	1.03	0.703	ND
Perfluoroheptanoic acid (PFHpA)	ND	0.677	0.399	ND
Perfluorooctanoic acid (PFOA)	ND	2.84	1.53	ND
Perfluorodecanoic acid (PFDA)	0.0257	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	0.0702	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	0.25	ND
Perfluorohexanesulfonic acid (PFHxS)	0.0456	ND	0.349	ND
Perfluorooctanesulfonic acid (PFOS)	0.3085	ND	ND	0.209
Perfluorooctanesulfonamide (FOSA)	ND	ND	1.31	ND
6:2 FTS	ND	4.04	ND	ND
8:2 FTS	ND	3.4	ND	ND

Table 2-8 Previous Testing Comparison (XAD traps excluded)

2019			2020	
Average Air Emissions Results (mg/hr)	Average Air Emissions Results (lb/hr)	PFAS name	Average Air Emissions Results (mg/hr)	Average Air Emissions Results (lb/hr)
0.0044	9.72E-09	Perfluorobutanoic acid (PFBA)	0.0027	5.99E-09
0.0072	1.59E-08	Perfluorohexanoic acid (PFHxA)	ND	ND
0.0054	1.20E-08	Perfluoroheptanoic acid (PFHpA)	ND	ND
0.0436	9.61E-08	Perfluorooctanoic acid (PFOA)	0.0074	1.63E-08
0.0037	8.15E-09	Perfluorononanoic acid (PFNA)	ND	ND
0.0025	5.60E-09	Perfluorodecanoic acid (PFDA)	ND	ND
0.0029	6.34E-09	Perfluorododecanoic acid (PFDoA)	ND	ND
ND	ND	Perfluorooctanesulfonamide (FOSA)	0.0011	2.36E-09
0.0028	6.19E-09	Perfluoroundecanoic acid (PFUnA)	ND	ND
0.0016	3.55E-09	Perfluorohexanesulfonic acid (PFHxS)	ND	ND
0.0031	6.73E-09	Perfluorooctanesulfonic acid (PFOS)	ND	ND
0.0019	4.22E-09	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND
0.0022	4.94E-09	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND
0.0018	3.96E-09	6:2 FTS	0.0022	4.91E-09
ND	ND	8:2 FTS	0.0055	1.20E-08
Not Analyzed	Not Analyzed	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND
Not Analyzed	Not Analyzed	HFPO-DA (GenX)	0.0072	1.58E-08

3 Description of the Source

3.1 Site

NRC's Moose Creek Facility is located 24 miles southeast of Fairbanks, Alaska and is situated in the Tanana River valley, 1 mile from Eielson Air Force Base at 3520 Old Richardson Highway, North Pole, Alaska.

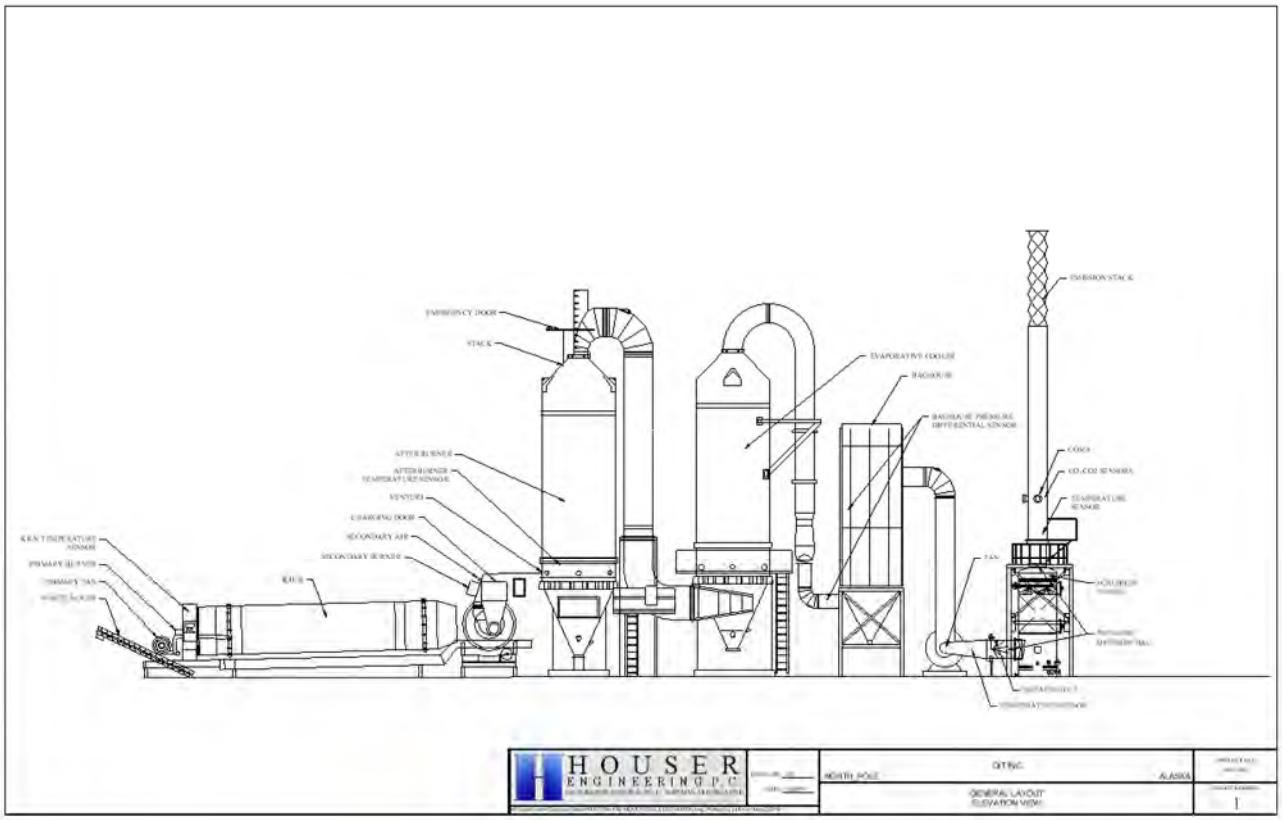
The Thermal Treatment System's primary components are:

- Rotary Combustion Kiln
- Air Mixing Section
- Secondary Combustion Chamber
- Cooling (Quench) Tower
- Two Bag Houses
- Induction Fan
- Wet Scrubber
- Emission Stack

A packed tower wet scrubber was installed in compliance with the new facility air permit to control HF emissions. The thermal system is controlled by a fully automated computer control system. The kiln operates under negative pressure, minimizing the possibility of gases escaping from the system. Processing begins with the injection of the waste material by a 16" diameter auger directly into the kiln. Once in the kiln, the contaminated material is exposed to high temperatures. The gas vapors and any airborne particulate are drawn from the kiln into the air mixing section and secondary combustion chamber and are exposed to higher temperatures, where oxidation occurs.

The superheated gases and airborne particulate then enter the cooling/quench tower, where the gases and particulate are exposed to an atomized spray of water. Thus, reducing particulate temperature. The cooled particulate is removed from the air stream while moving through the baghouse. Exhaust gasses enter a quench duct where they are saturated and further cooled before entering the wet scrubber. The saturated exhaust gas flows up through the packing where it is exposed to a caustic solution that removes and neutralizes the HF and then finally is exhausted through a 29.5-inch-diameter stack positioned on top of the new scrubber. Please see Figure 3-1 below for a schematic of the unit processes.

Figure 3-1
Unit Processes



Sample access was gained via platform through two new sample ports on the stack. The 4-inch sample ports have a nipple length of 4 inches. The sample ports are positioned in compliance with EPA Reference Method 1.

3.2 Source Operations

In the discussions between EPA and MCF management staff while planning for the test, EPA requested that the MCF maintain typical operations during the air emissions data collection effort. This includes material preparation and handling, temperature settings, and plant operating configurations. As such, the results of the air emissions test can be considered representative of typical facility operations.

Because of the timing of the test it was not possible to evaluate multiple sources of PFAS-contaminated soil to select soil characteristics or levels of contamination based on how these parameters would impact the test. The MCF had received and had prepared for thermal treatment a volume of PFAS-contaminated soil that was above the State CULs for regulated PFAS compounds. It was this soil that was used for the test. Analysis showed that this soil came from sources where PFOS was the highest concentration of any one PFAS compound with levels ranging from 0.01 to 1.40 mg/kg with most sources being on the lower end of that range.

The MCF collects a variety of data as part of normal operations and as needed to meet regulatory compliance requirements. Data are collected at 1-minute intervals through a computerized Continuous Emission Monitoring System (CEMS). These data have been summarized here to establish baseline plant operations information specific to each air emissions data collection test run. The complete CEMS reports are provided as Appendix C, Field Data Sheets and Operations Data. While several test runs were completed, three of these test runs are the subject of this report, and operations data are provided for the 4-hour period associated with each run. Parameters for which operations data were collected include temperature from several points in the treatment system, CO, O_2, and contaminated material feed rate.

The following Table 3-1 provides a summary of the operations data collected for each test run, 1, 3, and 5. All values represent an average taken over the duration of each test run. While the MCF does use a belt sale to measure the rate material is fed into the kiln, that scale does not provide consistent accurate readings at these lower rates. Hand calculations of the number of loader buckets of material placed into the feed hopper over time were used to establish a relatively consistent feed rate of 3.5 tons per hour (tph) into the kiln.

Table 3-1 Operations Data

Parameter	Run 1	Run 3	Run 5
Afterburner Temp (°F)	1988	1937	1938
Stack Temp (°F)	157	159	159
CO Level (0-200 ppm)	0.89	1.26	2.16
O2 Level (0-25%)	15.8	12.5	11.5
Feed Rate (tph)	3.5	3.5	3.5

A few operations issues were noted during the test.

- The O_2 sampling line was frozen for the first 3 hours of test run 1.
- A heater the controls fog formation on the Continuous Opacity Monitoring System (COMS) mirrors failed resulting in out of compliance opacity readings for the duration of the test.
- A faulty flow meter resulted in an increase in the recirculation of the fluid in the wet scrubber. While the scrubber continued to operate within acceptable parameters, the concentration of contaminants in the scrubber liquid was higher than normal for typical operations.
- An anti-corrosion coating in the stack began to fail and may have deposited solids on the top of the mist eliminator in the wet scrubber. This could result in increased velocities through the mist eliminator, channeling of air flow, and water droplet formation in the stack.

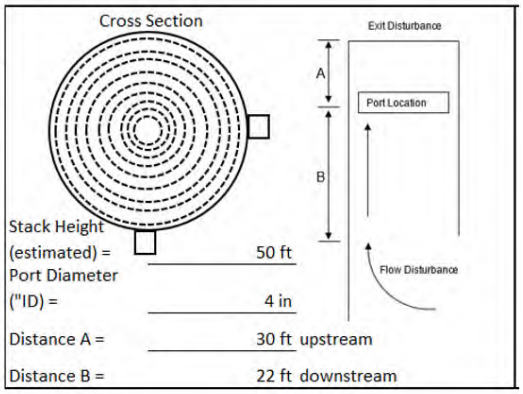
4 Description of Sample Locations

The unit emissions were sampled from the exhaust stack through two 4-inch sample ports that were accessed from an existing platform. The sample ports were located approximately 22 feet downstream from the nearest flow disturbance and approximately 30 feet upstream of the stack exit. The stack was traversed for 24 points per Method 1. See figure 4-1 below.

Figure 4-1
Sample Locations

(1) Traverse Point #	(2) Percentage of Duct Length (Table 1-2)	(3) Duct Depth (diameter)	(4) Traverse Point Location (2) x (3)	(5) Port length Y (in)	(6) Traverse Point Location from outside of Port Column (4) + (5)
1	2.1%	29.5	0.62	4.00	4.62
2	6.7%		1.98		5.98
3	11.8%		3.48		7.48
4	17.7%		5.22		9.22
5	25.0%		7.38		11.38
6	35.6%		10.50		14.50
7	64.4%		19.00		23.00
8	75.0%		22.13		26.13
9	82.3%		24.28		28.28
10	88.2%		26.02		30.02
11	93.3%		27.52		31.52
12	97.9%		28.88		32.88

* Traverse locations 1 & 12 will be adjusted per Method 1-11.3.2.1 if does not meet criteria set forth in Method 1 - 11.3.1.4



5 Description of the Testing

5.1 Test Methods

The emission-testing program was performed in accordance with EPA Reference Methods as prescribed in *40 CFR 60, Appendix A*. The specific methods are listed below.

- Method 1 — Sample and Velocity Traverses for Stationary Sources
- Method 2 — Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
- Method 3A — Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)
- Method 4 — Determination of Moisture content in Stack Gases
- Method 5 — Determination of Particulate Emissions from Stationary Sources
- Modified Method 0010 — MM-5, Method for Determining HFPO-DA and Other Method 537 PFAS Compound Emissions in Stack Gas
- Modified Method 18 — Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas

the following methods that are still in development stage:

- Modified Method 0010 (MM-5) Sampling Train - Method for Determining HFPO-DA and Other Method 537 PFAS compound Emissions in Stack Gas
- Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas
- Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters

Although Modified Method 18 and the SUMMA Canisters were completed during this testing series, they are not included in this report. A copy of MM-5 is attached to this report in Appendix G, Project Correspondence.

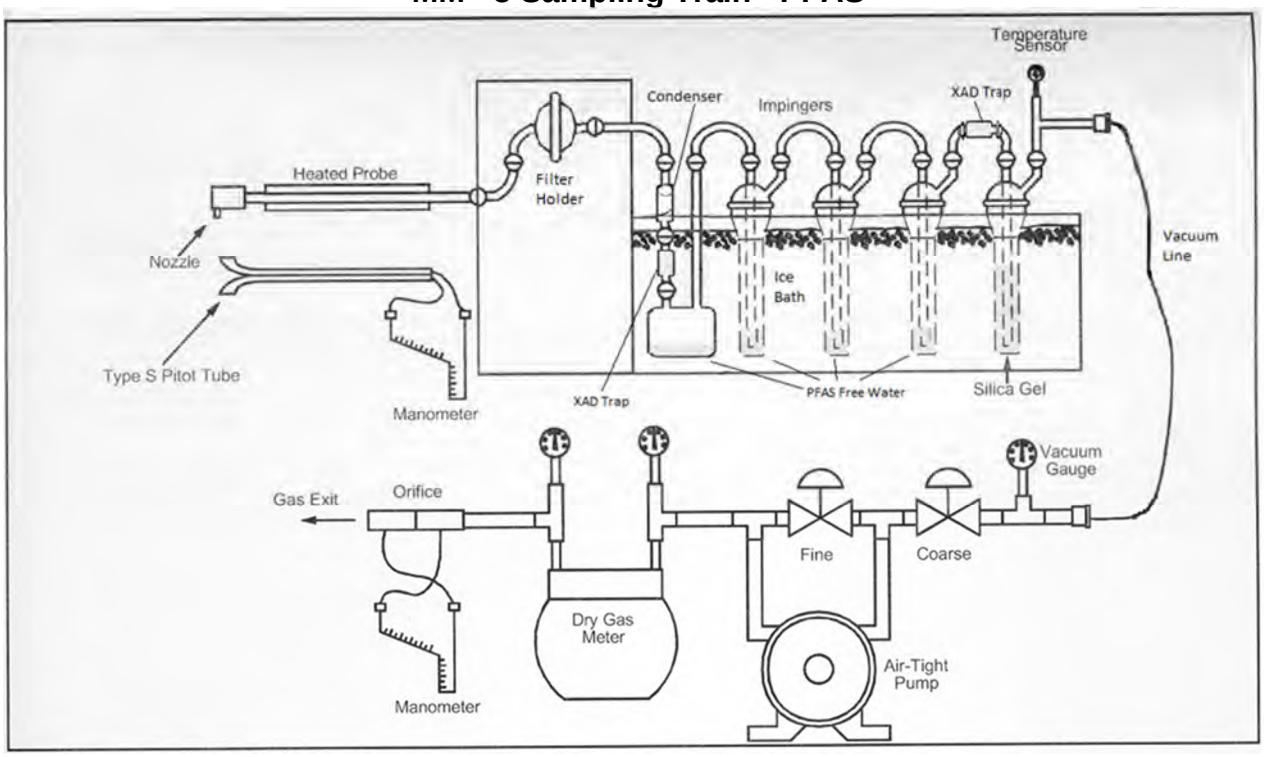
5.2 Description of Test Procedures and Equipment

5.2.1 MM-5 PFAS and Method 5

The PFAS testing consisted of six 4-hour sample runs performed in accordance with MM-5. AST gathered raw data for all six runs. Run 1, 3, and 5 samples were tested in the lab using method 537, whereas Runs 2, 4, and 6 were analyzed using a different method to test for non-targeted analytes. Sample results from Runs 2, 4, and 6 are excluded from this report but samples for the runs were gathered using MM-5 PFAS. There were no problems with any of the AST equipment. The filters were installed in the sample box heated chamber outside the sample stack. The filters were recovered and sent to the lab. PFAS-free water was obtained from the SGS laboratory in 2018 and this water was used in all rinses for the 2019 EPA test. Prior to mobilizing for the test, all glassware and stainless steel that would contact the internal parts of the train and all glass impinger components were meticulously cleaned and rinsed multiple times with PFAS-free water and reagent grade methanol. All components were sealed in double polyethylene wrap for transport. Clean surface protocol was also followed. PFAS is prevalent in the ambient environment. Silicone o-rings were used for sealing the train. The o-rings and glass fiber filters that were used in the 2019 EPA test were found to be free of PFAS in the 2018 laboratory analysis.

A schematic of the sampling train for PFAS testing is shown in Figure 5-1.

Figure 5-1
MM - 5 Sampling Train - PFAS



The tests were performed just like a Method 5 test. All runs except run 3 met the iso-kenetic criteria specified in Method 5. Run 3 calculated out to be around 115%. The limit is 110% and AST believes this variance does not significantly affect results. The local conditions created a dificult testing atmosphere.

MM-5 testing consisted of six sample runs, each run consisting of 24 individual traverse points, 12 points for each sample port. Each traverse point was sampled for 10 minutes for a run length of 240 minutes.

Prior to each sample run, the impinger train was prepared and a pre-sample impinger weight determined with a top loading electronic balance. The data was recorded on a field data sheet. The sample train was then assembled with a glass-fiber filter, the probe heater and sample box heaters were engaged, and the system allowed to heat up to the set-point temperature. A pre-run leak test was performed at a vacuum greater than expected during the run. A post test leak check was performed with a vacuum greater than the maximum recorded vacuum reached during the run. Leak checks were also performed on the Pitot tube and combustion gas sample lines. Once all of the leak tests had been successfully completed, the initial DGM, dry gas meter, reading was recorded. The stack port was opened and the sample train nozzle positioned to the first traverse point. The ΔP reading was recorded, and sample flow initiated and adjusted for the appropriate isokinetic sampling rate. Data points were recorded for ΔH, sample box temperature, impinger train exit temperature, DGM inlet/outlet temperature, and system vacuum. At the conclusion of sample point time the probe was immediately moved to the next point, the sample flow adjusted for isokinetics, and the data recorded. This procedure was repeated for each successive point along the traverse. At the conclusion of the sample run the sample pump valve was closed and the probe was removed from the stack. The final sample

volume was recorded from the DGM. A post-run leak check was performed at a vacuum equal to or greater than the highest vacuum recorded during the run.

The impinger train was disassembled and final weights determined for each impinger (to the nearest 0.5 grams). The total grams of water captured was calculated and recorded on the field data sheet found in Appendix C.

It was important during PFAS testing that ice water circulation through the coil condenser and the XAD traps be as cold as reasonably possible. The exit temperature of the coil condenser effluent (water and gases) was maintained low to prevent target analyte breakthrough.

Field blanks and trip blanks were collected for analysis. Please see Appendix E, Quality Assurance, for the chain of custody documents.

Once the system had cooled, sample recovery began by disassembling the train. The nozzle, probe assembly, and filter assembly were sealed with polyethylene wrap and removed to a clean location for sample recovery. The NRC office was utilized for this purpose. The sample train was disassembled. Using a stainless-steel spatula and forceps, the filter was removed and was given to TestAmerica on-site personnel to label and to retain custody. Polyethylene bottles were used to transport the recovered samples to the lab. The MM-5 samples were stored and transported on ice in insulated coolers. TestAmerica supplied a detailed chain of custody and procedure of how to label samples. The MM-5 sample train consisted of seven sampling fractions including the glass fiber filter, the probe/nozzle/front part of the filter holder Methanol/5% NH_4OH rinses, condensate, impinger contents, the back half of the filter holder/coil condenser/connecting glassware Methanol/5% NH_4OH rinses, XAD trap, and the breakthrough XAD trap. Please see the sample layout below.

Table 5-1 PFAS Sample Descriptions and Labels

Sample Contents	Label
Glass fiber filter, Methanol rinse, and 5% NH_4OH rinse	FH
Methanol rinse, 5% NH_4OH rinse, and XAD trap	BH
Condensate and Impinger Contents	IMP 1,2, &3 Condensate
Breakthrough XAD trap	Breakthrough XAD-2 Resin Tube

TestAmerica laboratory personnel were on site to help with sample custody. All sample containers were provided by TestAmerica and came pre labeled. Chain of custody was maintained. AST took the samples back to Anchorage and sent them to Knoxville, TN via FEDEX.

Method 5, MM-5 equipment and associated hardware are listed below:

- Test console with sample flow control, dry gas test meter, temperature controllers for probe and sample box heater, thermocouple readouts, and dual incline manometers for delta H and delta P
- Leak-free vacuum pump
- Thermostatically controlled heated filter box
- Ice bath impinger tray with sample-out thermocouple sensor
- Umbilical with Pitot lines, thermocouple wire, and control wiring
- MM-5 glassware set

- A high temperature Pitot tube/probe assembly including type-S Pitot tube, K-type thermocouple attached to an Inconel sheath containing an Inconel heated probe liner
- filter holder for the sample box heated chamber
- glass nozzles
- 47mm glass fiber filters
- XAD traps
- Critical orifice sample flow calibration kit
- Sample recovery kit
- Analytical balance capable of determinations to 0.1 mg

All of the equipment specified above was provided and/or manufactured by the Environmental Supply Company of Durham, North Carolina.

Sample Nozzle: The sample nozzle is a buttonhook-shaped tube with a tapered edge on the outside circumference of the tip. Selection of the appropriate nozzle diameter size is essential to isokinetic sampling. Sample gases must pass through the nozzle at ±10% the velocity and conditions as present in the stack. The nozzle materials may be borosilicate glass, quartz glass, stainless steel, or Inconel. The nozzle for this testing program was glass with a nozzle diameter of 0.390 inch.

Sample box filter holder: A glass filter holder that holds the 47mm glass fiber filters (clean filters were provided by TestAmerica) was used. The filter holder attached to the conventional Method 5 probe inside the sample box heated chamber.

Probe Assembly: This assembly includes the stainless steel liner, a stainless steel probe sheath, stainless steel S-type Pitot tube and a K-type thermocouple sensor to monitor stack gas temperature. A 4-foot glass probe was used. A K-type thermocouple temperature is attached to the probe liner exterior surface to monitor the probe temperature. The stainless steel probe sheath houses the glass probe liner. A tube fitting is welded to the front of the sheath to connect the sample nozzle. The S-type Pitot is tack welded to the exterior of the probe sheath. The K-type thermocouple sensor for stack gas temperature is attached to the Pitot tube. MM-5 suggests to not have a heated probe, but due to the high moisture content in the stack resulting from operation of the scrubber this was not possible. A deviation was made, and the probe was heated to 170°F for runs 1 through 4 and 250°F for runs 5 through 6.

Impinger Train and Ice Bath: The Impinger train was assembled per MM-5, please refer to Figure 4-1. Prior to testing, all glassware was cleaned in accordance with MM-5.

Note: *To facilitate leak-free operations, all sample train connections from the probe liner to filter assembly and impinger train are made with ball and socket joints equipped with silicone o-rings. These same o-rings were analyzed by SGS Laboratories for the 2018 source test to confirm no PFAS was incorporated in the material.*

Control Console: The control console is the heart of the sample system. Components include a rotary vane vacuum pump with valves to draw and control the flow of sample gases through the system. The sample gas passes from the sample pump through a DGM that measures the sample volume to an accuracy of 0.001 cubic feet. K-type thermocouples are located on the DGM inlet and outlet to monitor average temperature. A flow orifice is attached to the outlet of the DGM. The console is equipped with a gauge to monitor system vacuum. Two digital temperature controllers are included to maintain probe and sample box temperatures. Double incline oil-filled manometers (0-10" H_2O) are located on the console front panel to indicate the differential pressures from the flow orifice (ΔH) and the Pitot

measurement of stack gas velocity head (ΔP). A digital thermocouple readout is located on the panel. Quick-connect-type connectors are provided for sample and Pitot lines. Connections for the umbilical electrical line and thermocouple inputs are also provided in the front panel.

5.2.2 O2/CO2 Testing

Prior to the beginning of the testing program, an initial full-scale calibration was performed on each gas analyzer to determine linearity. The zero and calibration gases used were certified in accordance with EPA protocol procedures and traceable to standards of the National Institute of Standards and Technology (NIST). Calibration gas for the initial calibration and any subsequent adjusted calibrations was introduced directly to the back of each analyzer. System bias checks and calibration checks for zero and span drift were conducted by introducing the calibration gasses at the probe connection, which allowed the calibration gases to flow through the entire sample system. This served two purposes, (1) to check for any system bias and (2) to check sample system integrity for air leaks. A system response time check was performed. The O_2/CO_2 analyzer system response time was 45 seconds. Zero and span checks were performed for each gas analyzer prior to and following each sample run. This was to assess calibration drift during the sample period and determine if calibration adjustments were necessary.

The zero and span checks are noted in the data files in Appendix B. These values are also used to adjust the raw analyzer data in accordance with EPA Method 7E. Zero drift and span values all met method requirements for O_2. The AST technician neglected checking the CO_2 bias check at the end of the testing day. It should be noted that the CO_2 Bias was off. This was due to the changing weather conditions and AST is very confident there was no effect on results.

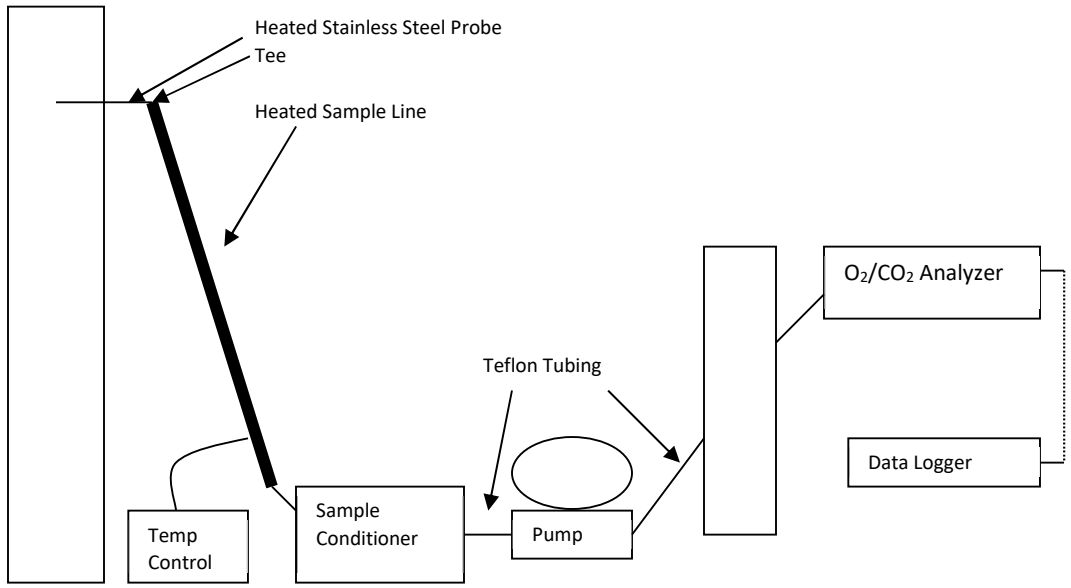
The exhaust gas concentrations for CO_2 and O_2 were measured using instrumental methods. Sample gas was extracted though a heated stainless steel probe equipped with a filter and inserted through the sample port. The sample gas was drawn from the probe through a 50-foot Teflon sample line and into a sample conditioner. The sample line temperature was maintained at 250 ºF. The sample conditioner is designed to condense and remove moisture from the sample gas while minimizing any water/gas contact. This minimizes any sample gas loss due to solubility. Dry gas from the conditioner then entered a Teflon-lined head sample pump and then the sample flow was distributed to the individual gas analyzers. Each of the instruments sent an output signal to a data recorder. The data recorder polled each analog instrument signal once every 30 seconds, converted the signal to engineering units, and recorded each data point into memory.

Method 3A equipment is described below and a schematic provided in Figure 5-2. The O_2/CO_2 analysis for the combustion gas sample was performed using a Servomex 4900C1 Analyzer. The instrument specifications are listed below.

Oxygen Analyzer Components	Carbon Dioxide Components
Principle of Operation: Paramagnetic	Principle of Operation: NDIR
Span: 0-5%, 0-10%, 0-25%	Span: 0-10%, 0-20%
Linearity: Better than ± 1 % full scale	Linearity: Better than ± 1 % full scale
Zero/Span Drift: Less than ± 0.01 % full scale in week	Zero/Span Drift: Less than ± 1 % full scale in 24 hours

The sample conditioning system that was used is an Alfa Laval MAK 6-2.

Figure 5-2
Method 3A Stack Sampling System



Drawing Not to Scale

6 Calculations

All calculations were checked by a second party in-house. Hand calculations have been performed to verify the spreadsheet calculations. Please refer to Appendix A for a printout of the spreadsheets and for the sample calculations.

7 Quality Assurance

To ensure the collection of high quality and accurate data, AST strictly adhered to all EPA Reference Methods, including the *Quality Assurance Handbook for Air Pollution Measurement Systems Volume III,* during this testing program. In all other aspects of the testing, AST followed its own corporate Quality Program Manual QPM-1, Rev 1, 08/08/2010.

AST incorporated several measures to ensure successful, accurate sample collection and analysis. These measures are discussed below.

1) The ESC C-5000 source sampling train and other components used by AST meet or exceed method requirements.
2) AST performed pre- and post-run leak tests to ensure sample collection integrity. AST also performed pre- and post-test calibrations of the ESC C-5000 dry gas meter.

Documentation for all quality control/quality assurance activities for the sample collection is presented in Appendix E. AST follows the safety guidelines set forth in the Source Evaluation Society's Safety Handbook.

All the calculations and data entries have been independently checked.

Data quality objectives were met as described below in Table 7-1.

Table 7-1 Data Quality Assessment
Initial Analyzer Calibration and Bias Error Percentage

Calibration Gas		Analyzer Response	Bias Percent*	Span
Zero CO_2	0 %	-0.049 %	-0.49 %	9.998 %
Mid-Range CO_2	4.10 %	3.967 %	-1.33 %	
High Range CO_2	9.998 %	9.959 %	-0.39 %	
Zero O_2	0 %	0.013 %	0.06 %	20.9 %
Mid-Range O_2	10.02%	10.125 %	0.50 %	
High Range O_2	20.9%	20.633 %	-1.28 %	

*Method 7E, Eq. 7E-1, ACE = $((C_{Dir} - C_V)/CS)*100$ where ACE is Analyzer Calibration Error, C_{Dir} is measured concentration, C_V is concentration of calibration gas, and CS is calibration span.

Appendix A
Spreadsheets &
Example Calculations

PFAS EMISSIONS
Summary of Hits

Analyte	Total								Total excluding XAD Traps							
	Run 1		Run 3		Run 5		Average		Run 1		Run 3		Run 5		Average	
	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr	mg/hr	lb/hr
Perfluorobutanoic acid (PFBA)	0.0392	8.64E-08	0.0328	7.23E-08	0.0139	3.06E-08	**0.0286**	**6.31E-08**	0.0022	4.85E-09	0.0022	4.90E-09	0.0037	8.21E-09	**0.0027**	**5.99E-09**
Perfluoropentanoic acid (PFPeA)	0.0085	1.87E-08	0.0064	1.42E-08	0.0000	0.00E+00	**0.0050**	**1.10E-08**								
Perfluorohexanoic acid (PFHxA)	0.2196	4.84E-07	0.1798	3.96E-07	0.0052	1.15E-08	**0.1349**	**2.97E-07**								
Perfluoroheptanoic acid (PFHpA)	0.3196	7.05E-07	0.2813	6.20E-07	0.0049	1.08E-08	**0.2019**	**4.45E-07**								
Perfluorooctanoic acid (PFOA)	0.1247	2.75E-07	0.1047	2.31E-07	0.0084	1.86E-08	**0.0793**	**1.75E-07**	0.0093	2.04E-08	0.0082	1.80E-08	0.0048	1.05E-08	**0.0074**	**1.63E-08**
Perfluorodecanoic acid (PFDA)	0.1113	2.75E-07	0.0915	2.31E-07	0.0000	1.86E-08	**0.0676**	**1.75E-07**								
Perfluorobutanesulfonic acid (PFBS)	0.0270	5.96E-08	0.0229	5.05E-08	0.0000	0.00E+00	**0.0167**	**3.67E-08**								
Perfluorooctanesulfonic acid (PFOS)	0.0078	1.71E-08	0.0065	1.44E-08	0.0000	0.00E+00	**0.0048**	**1.05E-08**								
Perfluorooctanesulfonamide (FOSA)	0.0000	0.00E+00	0.0032	7.07E-09	0.0000	0.00E+00	**0.0011**	**2.36E-09**	0.0000	0.00E+00	0.0032	7.07E-09	0.0000	0.00E+00	**0.0011**	**2.36E-09**
6:2 FTS	0.0038	8.48E-09	0.0028	6.25E-09	0.0000	0.00E+00	**0.0022**	**4.91E-09**	0.0038	8.48E-09	0.0028	6.25E-09	0.0000	0.00E+00	**0.0022**	**4.91E-09**
8:2 FTS	0.0104	2.30E-08	0.0024	5.35E-09	0.0035	7.70E-09	**0.0055**	**1.20E-08**	0.0104	2.30E-08	0.0024	5.35E-09	0.0035	7.70E-09	**0.0055**	**1.20E-08**
HFPO-DA (GenX)	0.0188	4.15E-08	0.0188	4.15E-08	0.0261	5.76E-08	**0.0213**	**4.69E-08**	0.0033	7.35E-09	0.0079	1.73E-08	0.0103	2.27E-08	**0.0072**	**1.58E-08**

PFAS EMISSIONS - EXCLUDING XAD TRAPS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorobutanoic acid (PFBA)	M_n	mg	1.03E-06	1.20E-06	1.77E-06
PFBA Collected	M_n	lb	2.27E-12	2.65E-12	3.90E-12
PFBA Concentration	C_s	mg/scf	8.46E-09	7.87E-09	1.15E-08
PFBA Emission		**mg/hr**	**0.0022**	**0.0022**	**0.0037**
PFBA Emission		**lb/hr**	**4.85E-09**	**4.90E-09**	**8.21E-09**
Perfluorooctanoic acid (PFOA)	M_n	mg	4.34E-06	4.40E-06	2.27E-06
PFOA Collected	M_n	lb	9.57E-12	9.70E-12	5.00E-12
PFOA Concentration	C_s	mg/scf	3.56E-08	2.88E-08	1.48E-08
PFOA Emission		**mg/hr**	**0.0093**	**0.0082**	**0.0048**
PFOA Emission		**lb/hr**	**2.04E-08**	**1.80E-08**	**1.05E-08**
Perfluorooctanesulfonamide (FOSA)	M_n	mg	ND	1.73E-06	ND
FOSA Collected	M_n	lb	ND	3.81E-12	ND
FOSA Concentration	C_s	mg/scf	ND	1.13E-08	ND
FOSA Emission		**mg/hr**	**0.0**	**0.0032**	**0.0**
FOSA Emission		**lb/hr**	**0.0**	**7.07E-09**	**0.0**

PFAS EMISSIONS - EXCLUDING XAD TRAPS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
6:2 FTS	M_n	mg	1.80E-06	1.53E-06	ND
6:2 FTS Collected	M_n	lb	3.97E-12	3.37E-12	ND
6:2 FTS Concentration	C_s	mg/scf	1.48E-08	1.00E-08	ND
6:2 FTS Emission		**mg/hr**	**0.0038**	**0.0028**	**0.0**
6:2 FTS Emission		**lb/hr**	**8.48E-09**	**6.25E-09**	**0.0**
8:2 FTS	M_n	mg	4.89E-06	1.31E-06	1.66E-06
8:2 FTS Collected	M_n	lb	1.08E-11	2.89E-12	3.66E-12
8:2 FTS Concentration	C_s	mg/scf	4.02E-08	8.59E-09	1.08E-08
8:2 FTS Emission		**mg/hr**	**0.0104**	**0.0024**	**0.0035**
8:2 FTS Emission		**lb/hr**	**2.30E-08**	**5.35E-09**	**7.70E-09**
HFPO-DA (GenX)	M_n	mg	1.56E-06	4.24E-06	4.90E-06
GenX Collected	M_n	lb	3.44E-12	9.35E-12	1.08E-11
GenX Concentration	C_s	mg/scf	1.28E-08	2.78E-08	3.19E-08
GenX Emission		**mg/hr**	**0.0033**	**0.0079**	**0.0103**
GenX Emission		**lb/hr**	**7.35E-09**	**1.73E-08**	**2.27E-08**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorobutanoic acid (PFBA)	M_n	mg	1.83E-05	1.77E-05	6.60E-06
PFBA Collected	M_n	lb	4.04E-11	3.90E-11	1.46E-11
PFBA Concentration	C_s	mg/scf	1.51E-07	1.16E-07	4.30E-08
PFBA Emission		**mg/hr**	**0.0392**	**0.0328**	**0.0139**
PFBA Emission		**lb/hr**	**8.64E-08**	**7.23E-08**	**3.06E-08**
Perfluoropentanoic acid (PFPeA)	M_n	mg	3.97E-06	3.47E-06	ND
PFPeA Collected	M_n	lb	8.75E-12	7.65E-12	ND
PFPeA Concentration	C_s	mg/scf	3.26E-08	2.27E-08	ND
PFPeA Emission		**mg/hr**	**0.0085**	**0.0064**	**0.0**
PFPeA Emission		**lb/hr**	**1.87E-08**	**1.42E-08**	**0.0**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorohexanoic acid (PFHxA)	M_n	mg	1.03E-04	9.70E-05	2.48E-06
PFHxA Collected	M_n	lb	2.27E-10	2.14E-10	5.47E-12
PFHxA Concentration	C_s	mg/scf	8.44E-07	6.36E-07	1.62E-08
PFHxA Emission		**mg/hr**	**0.2196**	**0.1798**	**0.0052**
PFHxA Emission		**lb/hr**	**4.84E-07**	**3.96E-07**	**1.15E-08**
Perfluoroheptanoic acid (PFHpA)	M_n	mg	1.50E-04	1.52E-04	2.32E-06
PFHpA Collected	M_n	lb	3.30E-10	3.35E-10	5.11E-12
PFHpA Concentration	C_s	mg/scf	1.23E-06	9.95E-07	1.51E-08
PFHpA Emission		**mg/hr**	**0.3196**	**0.2813**	**0.0049**
PFHpA Emission		**lb/hr**	**7.05E-07**	**6.20E-07**	**1.08E-08**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorooctanoic acid (PFOA)	M_n	mg	5.83E-05	5.65E-05	4.01E-06
PFOA Collected	M_n	lb	1.29E-10	1.25E-10	8.84E-12
PFOA Concentration	C_s	mg/scf	4.79E-07	3.70E-07	2.61E-08
PFOA Emission		**mg/hr**	**0.1247**	**0.1047**	**0.0084**
PFOA Emission		**lb/hr**	**2.75E-07**	**2.31E-07**	**1.86E-08**
Perfluorodecanoic acid (PFDA)	M_n	mg	5.21E-05	4.94E-05	ND
PFDA Collected	M_n	lb	1.15E-10	1.09E-10	ND
PFDA Concentration	C_s	mg/scf	4.28E-07	3.24E-07	ND
PFDA Emission		**mg/hr**	**0.1113**	**0.0915**	**0.0**
PFDA Emission		**lb/hr**	**2.45E-07**	**2.02E-07**	**0.0**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorobutanesulfonic acid (PFBS)	M_n	mg	1.27E-05	1.24E-05	ND
PFBS Collected	M_n	lb	2.79E-11	2.73E-11	ND
PFBS Concentration	C_s	mg/scf	1.04E-07	8.11E-08	ND
PFBS Emission		**mg/hr**	**0.0270**	**0.0229**	**0.0**
PFBS Emission		**lb/hr**	**5.96E-08**	**5.05E-08**	**0.0**
Perfluorooctanesulfonic acid (PFOS)	M_n	mg	3.64E-06	3.52E-06	ND
PFOS Collected	M_n	lb	8.02E-12	7.76E-12	ND
PFOS Concentration	C_s	mg/scf	2.99E-08	2.31E-08	ND
PFOS Emission		**mg/hr**	**0.0078**	**0.0065**	**0.0**
PFOS Emission		**lb/hr**	**1.71E-08**	**1.44E-08**	**0.0**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
Perfluorooctanesulfonamide (FOSA)	M_n	mg	ND	1.73E-06	ND
FOSA Collected	M_n	lb	ND	3.81E-12	ND
FOSA Concentration	C_s	mg/scf	ND	1.13E-08	ND
FOSA Emission		**mg/hr**	**0.0**	**0.0032**	**0.0**
FOSA Emission		**lb/hr**	**0.0**	**7.07E-09**	**0.0**
6:2 FTS	M_n	mg	1.80E-06	1.53E-06	ND
6:2 FTS Collected	M_n	lb	3.97E-12	3.37E-12	ND
6:2 FTS Concentration	C_s	mg/scf	1.48E-08	1.00E-08	ND
6:2 FTS Emission		**mg/hr**	**0.0038**	**0.0028**	**0.0**
6:2 FTS Emission		**lb/hr**	**8.48E-09**	**6.25E-09**	**0.0**

PFAS EMISSIONS

Run Number			1	3	5
DGM Volume	V_m	cubic feet	119.87	149.2959	152.712
DGM Y Factor	Y	-	0.982	0.982	0.982
DGM Average Temperature	T_m	Degrees R	516	510	517
Barometric Pressure	P_{bar}	Inches Hg	30.18	30.01	29.99
Delta H	ΔH	Inches Water	0.7	0.9	0.1
Sample Volume at Standard Conditions	V_{mstd}	Standard Cubic Feet	121.763	152.564	153.437
Total Volume of Water collected	V_{lc}	Milliliters	1039	1340	1341
Standard Volume of Water	V_{wstd}	Standard Cubic Feet	48.895	63.060	63.107
Stack Gas Moisture Content	B_{ws}	-	0.2865	0.2925	0.2914
Pitot Tube Coefficient	C_p	-	0.84	0.84	0.84
Average Pitot differential pressure	ΔP	Inches Water	0.07	0.08	0.11
Square Root of Differential Pressure		-	0.259	0.286	0.325
Average Stack Gas Temperature	$T_{s(ave)}$	Degrees R	604	610	607
Measured Stack Pressure	P_g	Inches Water	-0.18	-0.18	-0.18
Absolute Stack Pressure	P_s	Inches Hg	30.2	30.0	30.0
Stack $\%O_2$		%	12.39	11.91	11.70
Stack $\%CO_2$		%	6.15	6.56	6.68
Stack $\%N_2$ + %CO		%	81.5	81.5	81.6
Stack Gas Dry Molecular Weight	M_d	lb/lb mole	29.5	29.5	29.5
Stack Gas Wet Molecular Weight	M_s	lb/lb mole	26.19	26.16	26.17
Actual Average Velocity	V_s	ft/sec	16.26	18.09	20.54
Stack Diameter		inches	36.00	36.00	36.00
Stack Area	A	sq ft	7.07	7.07	7.07
Standard Stack Gas Volumetric Flow	Q_{sd}	Standard Dry Cubic Feet/min	4336.0	4712.1	5383.1
Nozzle Diameter		inches	0.390	0.390	0.390
Nozzle Area		sq ft	0.000830	0.000830	0.000830
Sample Time		min	240	240	240
Iso-kenetics		%	99.76	115.02	101.26
8:2 FTS	M_n	mg	4.89E-06	1.31E-06	1.66E-06
8:2 FTS Collected	M_n	lb	1.08E-11	2.89E-12	3.66E-12
8:2 FTS Concentration	C_s	mg/scf	4.02E-08	8.59E-09	1.08E-08
8:2 FTS Emission		**mg/hr**	**0.0104**	**0.0024**	**0.0035**
8:2 FTS Emission		**lb/hr**	**2.30E-08**	**5.35E-09**	**7.70E-09**
HFPO-DA (GenX)	M_n	mg	8.80E-06	1.02E-05	1.24E-05
GenX Collected	M_n	lb	1.94E-11	2.24E-11	2.74E-11
GenX Concentration	C_s	mg/scf	7.23E-08	6.65E-08	8.09E-08
GenX Emission		**mg/hr**	**0.0188**	**0.0188**	**0.0261**
GenX Emission		**lb/hr**	**4.15E-08**	**4.15E-08**	**5.76E-08**

PFAS EMISSONS- Sample Results

Analyte	Run 1						
	E-1305, E-1306	E-1307, E-1308	E-1309	E-1310	E-1311	Total	Total excluding XAD contamination
	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng	ng
Perfluorobutanoic acid (PFBA)	ND	8.48	ND	1.03	8.83	18.34	1.03
Perfluoropentanoic acid (PFPeA)	ND	2.07	ND	ND	1.9	3.97	ND
Perfluorohexanoic acid (PFHxA)	ND	52.6	ND	ND	50.2	102.8	ND
Perfluoroheptanoic acid (PFHpA)	ND	77.9	ND	ND	71.7	149.6	ND
Perfluorooctanoic acid (PFOA)	2.65	28.4	1.69	ND	25.6	58.34	4.34
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	26.5	ND	ND	25.6	52.1	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	6.66	ND	ND	5.99	12.65	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	1.79	ND	ND	1.85	3.64	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	1.8	ND	ND	ND	ND	1.8	1.8
8:2 FTS	4.89	ND	ND	ND	ND	4.89	4.89
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	2.65	1.56	ND	4.59	8.8	1.56
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

ND= NON-DECTECT

Analytes with ND = No Calc page needed

PFAS EMISSONS- Sample Results

Analyte	Run 3						
	E-1319, E-1320	E-1321, E-1322	E-1323	E-1324	E-1325	Total	Total excluding XAD contamination
	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng	ng
Perfluorobutanoic acid (PFBA)	ND	7.11	ND	1.2	9.38	17.69	1.2
Perfluoropentanoic acid (PFPeA)	ND	1.67	ND	ND	1.8	3.47	ND
Perfluorohexanoic acid (PFHxA)	ND	45.7	ND	ND	51.3	97	ND
Perfluoroheptanoic acid (PFHpA)	ND	74.4	ND	ND	77.4	151.8	ND
Perfluorooctanoic acid (PFOA)	2.67	26.6	1.73	ND	25.5	56.5	4.4
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	24.3	ND	ND	25.1	49.4	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	5.75	ND	ND	6.62	12.37	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	1.6	ND	ND	1.92	3.52	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	1.73	ND	ND	1.73	1.73
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	1.53	ND	ND	1.53	1.53
8:2 FTS	1.31	ND	ND	ND	ND	1.31	1.31
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	1.45	2.75	2.79	ND	3.16	10.15	4.24
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

ND= NON-DECTECT

Analytes with ND = No Calc page needed

PFAS EMISSONS- Sample Results

Analyte	Run 5						
	A-6612, A-6613	A-6614, A-6615	A-6616	A-6617	A-6618	Total	Total excluding XAD contamination
	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng	ng
Perfluorobutanoic acid (PFBA)	ND	2.48	1.77	ND	2.35	6.6	1.77
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	1.38	ND	ND	1.1	2.48	ND
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	2.32	2.32	ND
Perfluorooctanoic acid (PFOA)	2.27	1.74	ND	ND	ND	4.01	2.27
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	1.66	ND	ND	ND	ND	1.66	1.66
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	1.25	2.26	1.02	2.63	5.26	12.42	4.9
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

ND= NON-DECTECT

Analytes with ND = No Calc page needed

PFAS EMISSIONS - Blank Results

Analyte	A-6601, 6602 QC M0010 FH BT #1 ng/sample	A-6603, 6604 QC M0010 BH BT #1 ng/sample	A-6605 QC M0010 IMP 1,2,&3 COND BT #1 ng/sample	A-6606 QC M0010 IMP GLSWRE MEOH RINSE BT #1 ng/sample	A-6607 QC M0010 BRKTHRGH XAD-2 RSN TB BT #1 ng/sample	A-6615 QC M0100 XAD-2 RSN TB TB ng/sample
Perfluorobutanoic acid (PFBA)	ND	10.5	2.0	ND	9.3	9.02
Perfluoropentanoic acid (PFPeA)	ND	1.8	ND	ND	2	1.86
Perfluorohexanoic acid (PFHxA)	ND	55.1	ND	ND	52.6	50.2
Perfluoroheptanoic acid (PFHpA)	ND	84.1	ND	ND	80.8	74.4
Perfluorooctanoic acid (PFOA)	1.06	32.7	ND	ND	29.3	32.2
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	28.5	ND	ND	26.2	24.5
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	7.47	ND	ND	6.91	5.74
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	1.87	ND	ND	1.63	1.88
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	5.19	ND	ND	5.53	4.07
F-53B Major	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND

*Reagent Blanks, Proof Blanks, media check not included

M0010 XAD-2 Resin Tube

BT= Blank Train

TB= Trip Blank

RE= Re-extraction not included

PFAS EMISSIONS - Blank Results

Analyte	A-6608,6609 QC M0010 FH BT #2	A-6610, 6611 QC M0010 BH BT #2	A-6612 QC M0010 IMP 1,2&3 COND BT #2		A-6613 QC M0010 IMP GLSWRE MEOH RINSE BT #2	A-6614 QC M0010 BRKTHRGH XAD-2 RESIN TB BT #2	D-2356 QC M0010 XAD-2 RESIN TB TB
	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample
Perfluorobutanoic acid (PFBA)	1.77	2.8	3.15	8.27*	1.11	1.66	2.84
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	4.51	ND	ND	ND	3.04	ND
Perfluoroheptanoic acid (PFHpA)	ND	6.27	ND	ND	ND	4.37	ND
Perfluorooctanoic acid (PFOA)	ND	4.59	ND	5.42*	ND	4.69	1.09
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	2.73	ND	ND	ND	2.37	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	3.75	ND	ND	16*	ND	39	29.4
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND

*Reagent Blanks, Proof Blanks, media check not included

*Sample prepped / analyzed beyond specific holding time not included

M0010 XAD-2 Resin Tube

BT= Blank Train

TB= Trip Blank

RE= Re-extraction not included

PFAS EMISSIONS

FH Samples compared with Sample Blanks

M0010 Filter

M0010 FH of Filter Holder and Probe MeOH Rinse

Analyte	A-6601, 6602 QC M0010 FH BT #1 ng/sample	A-6608,6609 QC M0010 FH BT #2 ng/sample	Air Emission Samples Run 1 E-1305, E-1306 ng/sample	Run 3 E-1319, E-1320 ng/sample	Run 5 A-6612, A-6613 ng/sample
Perfluorobutanoic acid (PFBA)	ND	1.77	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	1.06	ND	2.65	2.67	2.27
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	1.8	ND	ND
8:2 FTS	ND	ND	4.89	1.31	1.66
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	3.75	ND	1.45	1.25
F-53B Major	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND
*Reagent Blanks, Proof Blanks not included	**TestAmerica Lab Report**				
BT= Blank Train	**J-17068-1**	**J-17068-3**			

TB= Trip Blank

RE= Re-extraction not included

PFAS EMISSONS

BH Samples compared with Sample Blanks

M0010 XAD-2 Resin Tube

M0010 BH of Filter Holder and Coil Condenser MeOH Rinse

Analyte	A-6603, 6604	A-6610, 6611	Air Emission Samples		
			Run 1	Run 3	Run 5
	QC M0010 BH BT #1 ng/sample	QC M0010 BH BT #2 ng/sample	E-1307, E-1308 ng/sample	E-1321, E-1322 ng/sample	A-6614, A-6615 ng/sample
Perfluorobutanoic acid (PFBA)	10.5	2.8	8.48	7.11	2.48
Perfluoropentanoic acid (PFPeA)	1.8	ND	2.07	1.67	ND
Perfluorohexanoic acid (PFHxA)	55.1	4.51	52.6	45.7	1.38
Perfluoroheptanoic acid (PFHpA)	84.1	6.27	77.9	74.4	ND
Perfluorooctanoic acid (PFOA)	32.7	4.59	28.4	26.6	1.74
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	28.5	2.73	26.5	24.3	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	7.47	ND	6.66	5.75	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	1.87	ND	1.79	1.6	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND
HFPO-DA (GenX)	5.19	ND	2.65	2.75	2.26
*Reagent Blanks, Proof Blanks not included	TestAmerica Lab Report				
BT= Blank Train	J-17068-1	J-17068-3			
RB= Reagent Blank					
MS= Matrix Spike					

PFAS EMISSIONS

Impinger Samples compared with Sample Blanks

	M0010 Impingers 1,2, and 3		Air Emission Samples		
			Run 1	Run 3	Run 5
Analyte	**A-6605 QC M0010 IMP 1,2,&3 COND BT #1 ng/sample**	**A-6612 QC M0010 IMP 1,2&3 COND BT #2 ng/sample**	**E-1309 ng/sample**	**E-1323 ng/sample**	**A-6616 ng/sample**
Perfluorobutanoic acid (PFBA)	2.00	3.15	ND	ND	1.77
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	ND	ND	1.69	1.73	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	1.73	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	1.53	ND
8:2 FTS	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	ND	1.56	2.79	1.02
F-53B Major	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND
*Reagent Blanks, Proof Blanks not included	**TestAmerica Lab Report**				
BT= Blank Train	**J-17068-1**	**J-17068-3**			
RB= Reagent Blank					

A-6612: QC M0010 IMP 1,2&3 COND BT #2 - Sample prepped / analyzed beyond specific holding time not included

RE= Re-extraction not included

PFAS EMISSIONS

Impinger Samples compared with Sample Blanks

	M0010 Impinger Glassware MeOH Rinse		Air Emission Samples		
			Run 1	Run 3	Run 5
Analyte	A-6606 QC M0010 IMP GLSWRE MEOH RINSE BT #1 ng/sample	A-6613 QC M0010 IMP GLSWRE MEOH RINSE BT #2 ng/sample	E-1310 ng/sample	E-1324 ng/sample	A-6617 ng/sample
Perfluorobutanoic acid (PFBA)	ND	1.11	1.03	1.2	ND
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	ND	ND	ND	2.63
F-53B Major	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND
*Reagent Blanks, Proof Blanks not included	TestAmerica Lab Report				
BT= Blank Train	J-17068-1	J-17068-3			
TB= Trip Blank					
RE= Re-extraction not included					

PFAS EMISSIONS

XAD Samples compared with Sample Blanks

M0010 Breakthrough XAD-2 Resin Tube

Analyte	A-6607 QC M0010 BRKTHRGH XAD-2 RSN TB BT #1 ng/sample	A-6615 QC M0100 XAD-2 RSN TB TB ng/sample	A-6614 QC M0010 BRKTHRGH XAD-2 RESIN TB BT #2 ng/sample	D-2356 QC M0010 XAD-2 RESIN TB TB ng/sample	Air Emission Samples Run 1 E-1311 ng/sample	Run 3 E-1325 ng/sample	Run 5 A-6618 ng/sample
Perfluorobutanoic acid (PFBA)	9.3	9.02	1.66	2.84	8.83	9.38	2.35
Perfluoropentanoic acid (PFPeA)	2	1.86	ND	ND	1.9	1.8	ND
Perfluorohexanoic acid (PFHxA)	52.6	50.2	3.04	ND	50.2	51.3	1.1
Perfluoroheptanoic acid (PFHpA)	80.8	74.4	4.37	ND	71.7	77.4	2.32
Perfluorooctanoic acid (PFOA)	29.3	32.2	4.69	1.09	25.6	25.5	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	26.2	24.5	2.37	ND	25.6	25.1	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	6.91	5.74	ND	ND	5.99	6.62	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	1.63	1.88	ND	ND	1.85	1.92	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	5.53	4.07	39	29.4	4.59	3.16	5.26
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND
*Reagent Blanks, Proof Blanks not included	TestAmerica Lab Report						
BT= Blank Train	J-17068-1		J-17068-3				
TB= Trip Blank							
RE= Re-extraction not included							
QC Media Check not included							

PFAS EMISSIONS
PERCENT DESTRUCTION

Analyte	PRE-TREATED SOIL 1				Average Air Emission Samples (XAD excluded)		Average Air Emission Samples (XAD included)		Percent Destruction (XAD excluded)	Percent Destruction (XAD included)
	µg/Kg	mg/Ton	mg/hr	mg	mg/hr	mg	mg/hr	mg	%	%
Perfluorobutanoic acid (PFBA)	0.12	0.1089	0.3810	**1.5241**	0.0027	**0.0109**	0.0286	**0.1145**	99.29%	92.49%
Perfluoropentanoic acid (PFPeA)	0.281	0.2549	0.8922	**3.5689**	ND		0.0050	**0.0199**	100.00%	99.44%
Perfluorohexanoic acid (PFHxA)	0.222	0.2014	0.7049	**2.8195**	ND		0.1349	**0.5395**	100.00%	80.87%
Perfluoroheptanoic acid (PFHpA)	0.176	0.1597	0.5588	**2.2353**	ND		0.2019	**0.8078**	100.00%	63.86%
Perfluorooctanoic acid (PFOA)	0.238	0.2159	0.7557	**3.0227**	0.0074	**0.0296**	0.0793	**0.3171**	99.02%	89.51%
Perfluorononanoic acid (PFNA)	0.0797	0.0723	0.2531	**1.0122**	ND		ND		100.00%	100.00%
Perfluorodecanoic acid (PFDA)	0.025	0.0227	0.0794	**0.3175**	ND		0.0676	**0.2705**	100.00%	14.81%
Perfluoroundecanoic acid (PFUnA)	0.0524	0.0475	0.1664	**0.6655**	ND		ND		100.00%	100.00%
Perfluorododecanoic acid (PFDoA)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND		0.0011	**0.0043**	0.0167	**0.0666**	*See Below	*See Below
Perfluoropentanesulfonic acid (PFPeS)	0.023	0.0209	0.0730	**0.2921**	ND		ND		100.00%	100.00%
Perfluorohexanesulfonic acid (PFHxS)	0.331	0.3003	1.0510	**4.2039**	ND		ND		100.00%	100.00%
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorooctanesulfonic acid (PFOS)	1.48	1.3426	4.6992	**18.7969**	ND		0.0048	**0.0191**	100.00%	99.90%
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND		ND		ND		N/A	N/A
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND		ND		0.0011	**0.0043**	*See Below	*See Below
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND		ND		ND		N/A	N/A
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND		ND		ND		N/A	N/A
4:2 FTS	ND	ND	ND		ND		ND		N/A	N/A
6:2 FTS	ND	ND	ND		0.0022	**0.0089**	0.0022	**0.0089**	*See Below	*See Below
8:2 FTS	0.506	0.4590	1.6066	**6.4265**	0.0055	**0.0218**	0.0055	**0.0218**	99.66%	99.66%
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND		ND		ND		N/A	N/A
HFPO-DA (GenX)	ND	ND	ND		0.0072	**0.0287**	0.0213	**0.0850**	*See Below	*See Below
F-53B Major	ND	ND	ND		ND		ND		N/A	N/A
F-53B Minor	ND	ND	ND		ND		ND		N/A	N/A

3.5 TONS/HR

4 hr sample time

In Soil analysis but not in air analysis:	
Perfluorododecanesulfonic acid (PFDoS)	ND
NEtFOSA	ND
NMeFOSA	ND
NMeFOSE	0.0778
NEtFOSE	ND
10:2 FTS	0.0636

*found in the results of air emissions stack testing but was not detected in the Pre-burn Analysis.

PFAS EMISSIONS

POST-TREATED SOILS, BAGHOUSE, AND WATERS

Analyte	Stake 66	STAKE 67	STAKE 68	STAKE 69	STAKE 70	POST-TREATED SOILS STAKES AVG	SCRUBBER WATER	FRESH WATER	BAGHOUSE
	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	ng/L	ng/L	µg/Kg
Perfluorobutanoic acid (PFBA)	0.0537	0.0335	0.0319	0.0525	0.0659	0.0475	1.75	0.935	0.043
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	0.968	0.681	ND
Perfluorohexanoic acid (PFHxA)	0.752	ND	ND	ND	ND	0.752	1.03	0.703	ND
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	0.677	0.399	ND
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	2.84	1.53	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	0.0257	ND	ND	ND	ND	0.0257	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	0.0702	ND	ND	ND	ND	0.0702	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	0.25	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	0.0582	0.033	ND	ND	ND	0.0456	ND	0.349	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	0.44	ND	ND	ND	0.177	0.3085	ND	ND	0.209
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND	1.31	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	4.04	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	3.4	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Major	ND	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND	ND	ND
In Soil analysis but not in air analysis:									
Perfluorododecanesulfonic acid (PFDoS)	ND	ND	ND	ND	ND		ND	ND	ND
NEtFOSA	ND	ND	ND	ND	ND		ND	ND	ND
NMeFOSA	ND	ND	ND	ND	ND		ND	ND	ND
NMeFOSE	ND	ND	ND	ND	ND		ND	ND	ND
NEtFOSE	ND	ND	ND	ND	ND		ND	ND	ND
10:2 FTS	ND	ND	ND	ND	ND		ND	ND	ND

2018		2019		PFAS name	2020	
Average Air Emissions Results (mg/hr)	Average Air Emissions Results (lb/hr)	Average Air Emissions Results (mg/hr)	Average Air Emissions Results (lb/hr)		Average Air Emissions Results (mg/hr)	Average Air Emissions Results (lb/hr)
0.0041	9.05E-09	0.0044	9.72E-09	Perfluorobutanoic acid (PFBA)	0.0027	5.99E-09
0.0108	2.37E-08	ND	ND	Perfluoropentanoic acid (PFPeA)	ND	ND
0.0127	2.80E-08	0.0072	1.59E-08	Perfluorohexanoic acid (PFHxA)	ND	ND
0.0042	9.33E-09	0.0054	1.20E-08	Perfluoroheptanoic acid (PFHpA)	ND	ND
0.0185	4.08E-08	0.0436	9.61E-08	Perfluorooctanoic acid (PFOA)	0.0074	1.63E-08
0.0012	2.55E-09	0.0037	8.15E-09	Perfluorononanoic acid (PFNA)	ND	ND
0.0033	7.18E-09	0.0025	5.60E-09	Perfluorodecanoic acid (PFDA)	ND	ND
0.0034	7.41E-09	0.0029	6.34E-09	Perfluorododecanoic acid (PFDoA)	ND	ND
ND	ND	ND	ND	Perfluorotridecanoic acid (PFTriA)	ND	ND
0.0031	6.93E-09	ND	ND	Perfluorotetradecanoic acid (PFTeA)	ND	ND
0.0134	2.95E-08	ND	ND	Perfluorobutanesulfonic acid (PFBS)	ND	ND
0.0044	9.75E-09	ND	ND	Perfluorooctanesulfonamide (FOSA)	0.0011	2.36E-09
ND	ND	0.0028	6.19E-09	Perfluoroundecanoic acid (PFUnA)	ND	ND
ND	ND	ND	ND	Perfluoropentanesulfonic acid (PFPeS)	ND	ND
ND	ND	0.0016	3.55E-09	Perfluorohexanesulfonic acid (PFHxS)	ND	ND
ND	ND	ND	ND	Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND
ND	ND	0.0031	6.73E-09	Perfluorooctanesulfonic acid (PFOS)	ND	ND
ND	ND	ND	ND	Perfluorononanesulfonic acid (PFNS)	ND	ND
ND	ND	ND	ND	Perfluorodecanesulfonic acid (PFDS)	ND	ND
ND	ND	0.0019	4.22E-09	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND
ND	ND	0.0022	4.94E-09	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND
ND	ND	ND	ND	4:2 FTS	ND	ND
ND	ND	0.0018	3.96E-09	6:2 FTS	0.0022	4.91E-09
ND	ND	ND	ND	8:2 FTS	0.0055	1.20E-08
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	HFPO-DA (GenX)	0.0072	1.58E-08
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	F-53B Major	ND	ND
Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	F-53B Minor	ND	ND

Example Average Gas Concentration

From 40 CFR 60, App. A, Method 7E

NRC LLC. – EPA – PFAS Testing

PFAS Test Run 1, O_2 Bias Correction

Where:

Variable	Definition	Run 1 Data
C_{gas}	Effluent gas concentration, %	
C_{avg}	Average gas concentration indicated by gas analyzer, %	C_{avg}= 12.438
C_{Dir}	Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode, %	$C_{Dir(zero)}$= 0.013 $C_{Dir(upscale)}$= 10.125
C_O	Average of initial and final system calibration bias check responses for the zero gas, %.	$C_O = \frac{(0.029+0.041)}{2} = 0.035$
C_M	Average of initial and final system calibration bias check responses for the upscale calibration gas, %	$C_M = \frac{(10.106+10.025)}{2} = 10.066$
C_{MA}	Actual concentration of the upscale calibration gas, %	C_{MA}= 10.02
C_s	Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode, %	$C_{s(zero)}$= 0.029 $C_{s(upscale)}$= 10.106
CS	Calibration span, % “upper limit of valid instrument response during sampling” (range)	CS = 20.9
D	Drift assessment, percent of calibration	
SB	System bias, percent of calibration span	
SB_i	Pre-run system bias, percent of calibration span	$SB_{i(zero)}$= 0.080 $SB_{i(upscale)}$=-0.088
SB_{final}	Post-run system bias, percent of calibration span	$SB_{final(zero)}$= 0.136 $SB_{final(upscale)}$= -0.476
SCE	System calibration error, percent of calibration span	

Sample System Bias (USEPA Method 7E, Eq. 7E- 2)

$$\boldsymbol{SB = 100\left(\frac{C_s - C_{Dir}}{CS}\right)}$$

$$\boldsymbol{SB_{Zero} = 100\left(\frac{0.029-0.013}{20.9}\right) = 0.076\%}$$

$$\boldsymbol{SB_{upscale} = 100\left(\frac{10.106-10.125}{20.9}\right) = -0.091\%}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Sample Drift Assessment (USEPA Method 7E, Eq. 7E – 4)

$$D = \left|SB_{final} - SB_i\right|$$

$$D_{zero} = |0.136 - 0.080| = 0.056\%$$

$$D_{upscale} = |-0.088 - (-0.476)| = 0.388\%$$

Sample Gas Concentration (USEPA Method 7E, Eq. 7E – 5b)

$$C_{gas} = \left(C_{avg} - C_O\right)\left(\frac{C_{MA}}{C_M - C_O}\right)$$

$$C_{gas} = \left(12.438 - 0.035\right)\left(\frac{10.02}{10.0066 - 0.035}\right) = 12.389$$

Example Moisture Content

From 40 CFR 60, App. A-3, Method 4

NRC LLC. – EPA – PFAS Testing

PFAS Test Run 1

Sample Volume at Standard Conditions $V_{m(std)}$ (USEPA Method 5, Eq. 5-1)

Dry Gas Meter (DGM) Volume (V_m):	119.870 *ft³*
DGM Y Factor (Y):	0.982
DGM Average Temperature (T_m):	516 *°R*
Barometric Pressure (P_{bar}):	30.18 *"Hg*
Average Delta H (ΔH):	0.75 *"H_2O*

$$V_{m(std)} = K_1 V_m Y \left(\frac{P_{bar} + \left(\frac{\Delta H}{13.6}\right)}{T_m}\right)$$

Where:

$V_{m(std)}$ = Volume of gas sample in standard cubic feet
Y = Dry gas meter calibration factor
T_m = Average DGM temperature
P_{bar} = Barometric pressure at site
ΔH = Average pressure differential across the orifice meter
K_1 = 17.64 $\frac{°R}{"Hg}$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

$$V_{m(std)} = \left(17.64 \frac{^{\circ}R}{" Hg}\right)(119.87\ ft^3)(0.982)\left(\frac{30.18\ " Hg + \left(\frac{0.75" H_2O}{13.6}\right)}{516\ ^{\circ}R}\right)$$

$$V_{m(std)} = 121.754\ ft^3_{standard}$$

Volume of water vapor condensed (USEPA Method 5, Eq. 5-2)

Total Water Collected in Sample Train (V_{1c}): 1038 *ml*

$$V_{w(std)} = K_2 V_{1c}$$

Where:

$V_{w(std)}$ = Volume of water vapor in the gas sample in standard cubic feet

K_2 = 0.04707 $\frac{ft^3}{ml}$

V_{1c} = total volume of liquid collect in ml at standard conditions

$$V_{w(std)} = \left(0.04707\ \frac{ft^3}{ml}\right)(1038\ ml)$$

$$V_{w(std)} = 48.848\ ft^3_{standard}$$

Moisture Content (USEPA Method 5, Eq. 5-3)

$$B_{ws} = \frac{V_{w(std)}}{(V_{m(std)} + V_{w(std)})}$$

Where:

B_{ws} = Moisture content of the sample gas expressed as a fraction

$$B_{ws} = \frac{48.848\ ft^3_{std}}{(121.754\ ft^3_{std} + 48.848\ ft^3_{std})}$$

$$B_{ws} = 0.286$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Example Stack Gas Velocity and Volumetric Flow Rate

From 40 CFR 60, App. A-1, Method 2

NRC LLC. – EPA – PFAS Testing

PFAS Test Run 1

Dry Molecular weight of stack gas (USEPA Method 3, Eq. 3-1)

$$\boldsymbol{Nitrogen, Carbon\ Monoxide\ Concentration} = (\boldsymbol{O_2}\% + \boldsymbol{CO_2}\%) - \mathbf{100}\% \quad \text{(Method 3, 12.2)}$$

$$(\%\boldsymbol{N_2} + \%\boldsymbol{CO}) = (\%\boldsymbol{O_2} + \%\boldsymbol{CO_2}) - \mathbf{100}\%$$

$$(\%\boldsymbol{N_2} + \%\boldsymbol{CO}) = (\mathbf{12.39} + \mathbf{6.15}) - \mathbf{100} = \mathbf{81.5}\%$$

$$\boldsymbol{M_d} = \mathbf{0.440}(\%\boldsymbol{CO_2}) + \mathbf{0.320}(\%\boldsymbol{O_2}) + \mathbf{0.280}(\%\boldsymbol{N_2} + \%\boldsymbol{CO})$$

Where:

M_d	=	Dry molecular weight, $\frac{\boldsymbol{lb}}{\boldsymbol{lb-mole}}$
$\%CO_2$	=	Percent CO_2 by volume, dry basis
$\%O_2$	=	Percent O_2 by volume, dry basis
$\%CO$	=	Percent CO by volume, dry basis
$\%N_2$	=	Percent N_2 by volume, dry basis
0.280	=	MW of N_2 or CO, divided by 100
0.320	=	MW of O_2, divided by 100
0.440	=	MW of CO_2, divided by 100

$$\boldsymbol{M_d} = \mathbf{0.440}(\mathbf{6.15}\%) + \mathbf{0.320}(\mathbf{12.39}\%) + \mathbf{0.280}(\mathbf{81.5}\%)$$

$$\boldsymbol{M_d} = \mathbf{29.48}\ \frac{\boldsymbol{lb}}{\boldsymbol{lb-mole}}$$

Saturated Molecular Weight of stack gas (USEPA Method 2, Eq. 2-6)

$$\boldsymbol{M_S} = \boldsymbol{M_d}(\mathbf{1} - \boldsymbol{B_{WS}}) + \mathbf{18.0}(\boldsymbol{B_{WS}})$$

Where:

M_S	=	Saturated molecular weight, $\frac{\boldsymbol{lb}}{\boldsymbol{lb-mole}}$
18.0	=	Molecular weight of water, $\frac{\boldsymbol{lb}}{\boldsymbol{lb-mole}}$

$$\boldsymbol{M_S} = \mathbf{29.48}(\mathbf{1} - \mathbf{0.286}) + \mathbf{18.0}(\mathbf{0.286})$$

$$\boldsymbol{M_S} = \mathbf{26.19}\frac{\boldsymbol{lb}}{\boldsymbol{lb-mole}}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Velocity Calculation (USEPA Method 2, Eq. 2-7)

Average Pitot differential pressure (Δp): 0.07 in.H_2O
Average stack temperature (T_s): 604 °R
Measured Stack Static Pressure (P_g): -0.18 in.H_2O
Barometric Pressure (P_{bar}): 30.18 in.Hg

$$V_S = K_p C_p \sqrt{\Delta p_{avg}} \sqrt{\frac{T_{s(abs)}}{P_S M_S}}$$

$$P_S = P_{bar} + P_g$$

Where:

V_s = Velocity, $\frac{ft}{sec}$

K_p = Velocity equation constant 85.49 $\frac{ft}{sec}\left[\frac{\left(\frac{lb}{lb-mole}\right)(in.Hg)}{(°R)(in.H_2O)}\right]^{\frac{1}{2}}$

C_p = Pitot tube coefficient = 0.84 (dimensionless)
Δp = Measured velocity head in.H_2O
T_s = Average Stack temperature, °R
P_s = Absolute Stack Pressure, in.Hg
M_s = Molecular weight of the Stack gas (wet)
P_{bar} = Barometric Pressure in inches of Hg
P_g = Static Pressure of stack, in.H_2O

1 in.H_2O = 0.0736 in.Hg

$$P_S = 30.18\ in.Hg + \left(-0.18 in.H_2O \left(0.0736 \frac{in.Hg}{inH_2O}\right)\right) = 30.167\ in.Hg$$

$$V_S = 85.49 \frac{ft}{sec}\left[\frac{\left(\frac{lb}{lb-mole}\right)(in.Hg)}{(°R)(in.H_2O)}\right]^{\frac{1}{2}} 0.84\sqrt{0.07 in.H_2O}\sqrt{\frac{604°R}{(30.167 in.Hg)\left(26.19\frac{lb}{lb-mole}\right)}}$$

$$V_S = 16.26 \frac{ft}{sec}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Volumetric Calculation (USEPA Method 2, Eq. 2-8)

Stack Diameter:	36 inches
Stack Area:	7.07 ft^2
Absolute stack temperature:	604 °R

$$\boldsymbol{Q_{sd} = 60(1 - B_{WS})V_S A \left[\frac{T_{std}P_S}{T_{S(abs)}P_{std}}\right]}$$

Where:

- Q_{sd} = Dry volumetric stack gas flow rate corrected to standard conditions (dscf/min)
- B_{ws} = Volume of water vapor in stack gas
- V_s = Average velocity (ft/sec)
- A = Stack cross sectional area (ft^2)
- T_{STD} = Standard absolute temperature, 530°R
- P_{STD} = Standard absolute pressure, 29.92 in Hg
- $T_{S(abs)}$ = Absolute stack temperature, °R

$$\boldsymbol{Q_{sd} = 60(1 - 0.286)\left(16.26\frac{ft}{sec}\right)(7.07ft^2)\left[\frac{(530°R)(30.167in.Hg)}{(604°R)(29.92in.Hg)}\right]}$$

$$\boldsymbol{Q_{sd} = 4,336.04\ \frac{dscf}{min}}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Example Isokinetic Variation

From 40 CFR 60, App. A-3, Method 5

NRC LLC. – EPA – PFAS Testing

PFAS Test Run 1

Isokinetic Variation (USEPA Method 5, Eq. 5-8)

Sample Time: 240 minutes
Nozzle Diameter: 0.390 inches
Nozzle Area: 0.000830 ft^2

$$\boldsymbol{I = K_5 \frac{T_S V_{m(std)}}{\theta v_s P_S A_n (1 - B_{ws})}}$$

Where:

I = Isokinetic variation, %
K_5 = 0.0945
A_n = Nozzle area, ft^2
θ = Sample time, min

$$\boldsymbol{I = 0.0945 \frac{(607°R)(83.559 ft^3)}{(240 min)\left(16.26 \frac{ft}{sec}\right)(30.16\ in.Hg)(0.000830 ft^2)(1 - 0.286)}}$$

$$\boldsymbol{I = 99.76\%}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Example PFAS Analyte Concentration

Perfluorooctanoic acid (PFOA) – XAD included

NRC LLC. – EPA – PFAS Testing

PFAS Test Run 1

Laboratory Data:

Analyte Concertation in Filter, FH Filter Holder, Probe MeOH Rinse (C_f):	2.65 $\frac{ng}{sample}$
Analyte Concertation in Resin Tube, BH Filter Holder, Coil Condenser MeOH Rinse (C_b):	28.40 $\frac{ng}{sample}$
Analyte Concertation in Impingers 1, 2, 3 (C_i):	1.69 $\frac{ng}{sample}$
Analyte Concertation in Impinger Glassware MeOH Rinse (C_g):	0.00 $\frac{ng}{sample}$
Analyte Concertation in Breakthrough XAD (C_x):	25.60 $\frac{ng}{sample}$

Total Mass Collected:

$$\boldsymbol{M_n = C_f + C_b + C_i + C_g + C_x}$$

$$\boldsymbol{M_n = 2.65\ \frac{ng}{sample} + 28.40\frac{ng}{sample} + 1.69\frac{ng}{sample} + 0.00\frac{ng}{sample} + 25.60\ \frac{ng}{sample}}$$

$$\boldsymbol{M_n = \frac{58.34\ ng}{1000000\frac{ng}{mg}} = 0.0000583\ mg}$$

Sample Volume at Standard Conditions (V_{mstd}):	121.754 *scf*
Standard Stack Gas Volumetric Flow (Q_{sd}):	4,336.04 *scf/min*

Perfluorooctanoic acid (PFOA) Concentration:

$$\boldsymbol{C_s = \frac{M_n}{V_{m(std)}}}$$

$$\boldsymbol{C_s = \frac{0.0000583\ mg}{121.754\ scf} = 0.000000479\ \frac{mg}{scf}}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Perfluorooctanoic acid (PFOA)Emission:

$$\boldsymbol{Air\ Emissions = Q_{sd} * C_s}$$

$$\boldsymbol{Air\ Emissions = 4336.04\ \frac{scf}{min} * 0.000000479\ \frac{mg}{scf} = 0.0021\ \frac{mg}{min} * 60\frac{min}{hr}}$$

$$\boldsymbol{= 0.125\ \frac{mg}{hr} * 0.000002205\ \frac{lb}{mg} = 0.000000275\frac{lb}{hr}}$$

Percent Destruction Analysis for analyte Perfluorooctanoic acid (PFOA):

Average Air Emissions Results (Runs 1, 3, 5) – XAD included (A):	0.0793 $\frac{mg}{hr}$
Soil Pre-Burn Results (B):	0.238 $\frac{\mu g}{kg}$
	0.216 $\frac{mg}{Ton}$
Operation tonnage rate (O):	3.5 $\frac{Tons}{hr}$
Sample Time (S):	4 *hr*

$$\boldsymbol{Total\ Milligrams\ (TM_{soil}) = B * O * S = 0.216\frac{mg}{ton} * 3.5\frac{ton}{hr} * 4hr = 3.024\ mg}$$

$$\boldsymbol{Total\ Milligrams\ (TM_{air}) = A * S = 0.0793\frac{mg}{hr} * 4hr = 0.317\ mg}$$

$$\boldsymbol{Percent\ Destruction = \left(1 - \frac{TM_{air}}{TM_{soil}}\right) * 100}$$

$$\boldsymbol{Percent\ Destruction = \left(1 - \frac{0.317\ mg}{3.024\ mg}\right) * 100}$$

$$\boldsymbol{Percent\ Destruction = 89.514\ \%}$$

Note: Any small differences between the example calculations and the spreadsheets are due to rounding.

Appendix B
Analyzer Data & Bias Corrections

o2 1014.csv "MDY4c./:"
10/15/2019 9:45
; 10/13/2019 12:43:21 ""
1

TIME	O2	CO2
10/13/2019 12:57	0.084118	-0.04902
10/13/2019 12:57	0.045778	-0.0506
10/13/2019 12:58	0.040977	-0.05218
10/13/2019 12:58	0.029414	-0.05162
10/13/2019 12:59	20.952	-5.76E-03
10/13/2019 12:59	10.0855	9.89679
10/13/2019 13:00	10.0963	9.9185
10/13/2019 13:00	10.099	9.92994
10/13/2019 13:01	10.1003	9.94383
10/13/2019 13:01	10.1064	9.94683
10/13/2019 13:02	10.1098	9.95244
10/13/2019 13:02	10.1098	9.95007
10/13/2019 13:03	10.1132	9.95694
10/13/2019 13:03	10.1132	9.9496
10/13/2019 13:04	10.1166	9.96278
10/13/2019 13:04	10.1145	9.9612
10/13/2019 13:13	11.8113	6.66651
10/13/2019 13:13	11.8479	6.60249
10/13/2019 13:14	11.7572	6.65719
10/13/2019 13:14	11.7268	6.66895
Run 1		
10/13/2019 13:15	11.7505	6.6504
10/13/2019 13:15	11.8181	6.58962
10/13/2019 13:16	11.8736	6.53666
10/13/2019 13:16	11.858	6.56152
10/13/2019 13:17	11.9358	6.48677
10/13/2019 13:17	11.9053	6.48291
10/13/2019 13:18	12.0034	6.42663
10/13/2019 13:18	11.8959	6.50027
10/13/2019 13:19	12.0034	6.39742
10/13/2019 13:19	12.1042	6.3342
10/13/2019 13:20	11.0762	7.14342
10/13/2019 13:20	10.8111	7.31495
10/13/2019 13:21	10.2383	7.69091
10/13/2019 13:21	10.5967	7.4163
10/13/2019 13:22	11.3055	6.9116
10/13/2019 13:22	12.0494	6.36703
10/13/2019 13:23	12.4105	6.15257
10/13/2019 13:23	12.6777	5.97078
10/13/2019 13:24	12.6885	5.9771
10/13/2019 13:24	12.8122	5.8853
10/13/2019 13:25	12.681	5.98255

TIME	O2	CO2
10/13/2019 13:25	12.7318	5.92942
10/13/2019 13:26	12.7088	5.961
10/13/2019 13:26	12.6668	5.98002
10/13/2019 13:27	12.4998	6.11405
10/13/2019 13:27	12.539	6.07292
10/13/2019 13:28	12.5837	6.04901
10/13/2019 13:28	12.4924	6.09613
10/13/2019 13:29	12.6276	6.0052
10/13/2019 13:29	12.4944	6.09597
10/13/2019 13:30	12.6175	6.02738
10/13/2019 13:30	12.5776	6.0479
10/13/2019 13:31	12.7635	5.92477
10/13/2019 13:31	12.6087	6.03117
10/13/2019 13:32	12.6939	5.97252
10/13/2019 13:32	12.5093	6.09984
10/13/2019 13:33	12.6357	6.01215
10/13/2019 13:33	12.5262	6.09045
10/13/2019 13:34	12.5546	6.05714
10/13/2019 13:34	12.5444	6.06653
10/13/2019 13:35	12.5613	6.06519
10/13/2019 13:35	12.3334	6.20885
10/13/2019 13:36	12.6066	6.0067
10/13/2019 13:36	12.9854	5.75656
10/13/2019 13:37	13.3661	5.47847
10/13/2019 13:37	13.3492	5.50586
10/13/2019 13:38	13.1565	5.63161
10/13/2019 13:38	12.9299	5.79918
10/13/2019 13:39	13.0151	5.7208
10/13/2019 13:39	13.2667	5.54202
10/13/2019 13:40	13.3999	5.44927
10/13/2019 13:40	13.5007	5.37468
10/13/2019 13:41	13.4838	5.39117
10/13/2019 13:41	13.6461	5.2543
10/13/2019 13:42	13.7239	5.2131
10/13/2019 13:42	13.824	5.14356
10/13/2019 13:43	13.9464	5.06249
10/13/2019 13:43	13.9443	5.06455
10/13/2019 13:44	13.8564	5.12556
10/13/2019 13:44	13.8449	5.13196
10/13/2019 13:45	13.8104	5.14877
10/13/2019 13:45	13.8071	5.14987
10/13/2019 13:46	13.8456	5.12967
10/13/2019 13:46	13.7333	5.20663
10/13/2019 13:47	13.6826	5.23307
10/13/2019 13:47	13.6245	5.27909
10/13/2019 13:48	13.6048	5.29677

TIME	O2	CO2
10/13/2019 13:48	13.5528	5.34121
10/13/2019 13:49	13.406	5.45598
10/13/2019 13:49	13.3154	5.52876
10/13/2019 13:50	13.2464	5.57856
10/13/2019 13:50	12.9421	5.78466
10/13/2019 13:51	12.7615	5.9134
10/13/2019 13:51	12.4727	6.11579
10/13/2019 13:52	11.9189	6.47975
10/13/2019 13:52	11.9506	6.43223
10/13/2019 13:53	11.833	6.50619
10/13/2019 13:53	12.0507	6.33885
10/13/2019 13:54	12.1921	6.2686
10/13/2019 13:54	11.9256	6.43776
10/13/2019 13:55	12.0399	6.36695
10/13/2019 13:55	11.8695	6.50098
10/13/2019 13:56	12.0352	6.31667
10/13/2019 13:56	11.9479	6.42489
10/13/2019 13:57	12.1028	6.34596
10/13/2019 13:57	12.0832	6.37469
10/13/2019 13:58	12.1988	6.26757
10/13/2019 13:58	11.9953	6.41921
10/13/2019 13:59	12.1698	6.3031
10/13/2019 13:59	12.3206	6.21485
10/13/2019 14:00	12.2171	6.27902
10/13/2019 14:00	12.2448	6.25652
10/13/2019 14:01	12.1698	6.31091
10/13/2019 14:01	12.3402	6.20711
10/13/2019 14:02	11.9824	6.43697
10/13/2019 14:02	12.1299	6.33041
10/13/2019 14:03	12.09	6.36159
10/13/2019 14:03	12.1982	6.28478
10/13/2019 14:04	12.2705	6.24579
10/13/2019 14:04	12.1955	6.28384
10/13/2019 14:05	12.4957	6.11365
10/13/2019 14:05	12.3287	6.19685
10/13/2019 14:06	12.4098	6.15004
10/13/2019 14:06	12.2901	6.23932
10/13/2019 14:07	12.3206	6.2098
10/13/2019 14:07	12.3321	6.20893
10/13/2019 14:08	12.2807	6.23719
10/13/2019 14:08	12.2874	6.24508
10/13/2019 14:09	12.207	6.27957
10/13/2019 14:09	12.3131	6.22732
10/13/2019 14:10	12.2685	6.25258
10/13/2019 14:10	12.372	6.18572
10/13/2019 14:11	12.2523	6.27428

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 14:11	12.2671	6.25858
10/13/2019 14:12	12.3327	6.21887
10/13/2019 14:12	12.3814	6.16954
10/13/2019 14:13	12.3983	6.16528
10/13/2019 14:13	12.2252	6.2896
10/13/2019 14:14	12.399	6.16086
10/13/2019 14:14	12.2942	6.23798
10/13/2019 14:15	12.1075	6.35701
10/13/2019 14:15	12.307	6.22093
10/13/2019 14:16	12.1955	6.29118
10/13/2019 14:16	12.3551	6.18888
10/13/2019 14:17	12.2868	6.23427
10/13/2019 14:17	12.3625	6.1884
10/13/2019 14:18	12.211	6.29883
10/13/2019 14:18	12.2225	6.2881
10/13/2019 14:19	12.2746	6.25645
10/13/2019 14:19	12.096	6.35922
10/13/2019 14:20	12.1109	6.36237
10/13/2019 14:20	12.0501	6.39371
10/13/2019 14:21	12.1427	6.3222
10/13/2019 14:21	12.0041	6.41487
10/13/2019 14:22	12.1346	6.34272
10/13/2019 14:22	12.115	6.35535
10/13/2019 14:23	12.0717	6.38234
10/13/2019 14:23	12.1982	6.30294
10/13/2019 14:24	12.0555	6.39537
10/13/2019 14:24	12.2144	6.2847
10/13/2019 14:25	12.1035	6.36482
10/13/2019 14:25	12.0967	6.35488
10/13/2019 14:26	12.2387	6.28099
10/13/2019 14:26	12.1637	6.31604
10/13/2019 14:27	12.282	6.23079
10/13/2019 14:27	12.184	6.30515
10/13/2019 14:28	12.2293	6.26789
10/13/2019 14:28	12.3104	6.23545
10/13/2019 14:29	12.067	6.37706
10/13/2019 14:29	12.2347	6.26489
10/13/2019 14:30	12.1502	6.32267
10/13/2019 14:30	12.3213	6.20245
10/13/2019 14:31	12.1569	6.32599
10/13/2019 14:31	12.2043	6.27318
10/13/2019 14:32	12.3997	6.15549
10/13/2019 14:32	12.1792	6.29528
10/13/2019 14:33	12.2056	6.27807
10/13/2019 14:33	12.255	6.26016
10/13/2019 14:34	12.2773	6.2334

TIME	O2	CO2
10/13/2019 14:34	12.2212	6.28234
10/13/2019 14:35	12.1589	6.32164
10/13/2019 14:35	12.2888	6.23379
10/13/2019 14:36	12.2306	6.25605
10/13/2019 14:36	12.2807	6.23687
10/13/2019 14:37	12.2218	6.27413
10/13/2019 14:37	12.4633	6.12802
10/13/2019 14:38	12.3835	6.16251
10/13/2019 14:38	12.209	6.28447
10/13/2019 14:39	12.3091	6.21051
10/13/2019 14:39	12.307	6.21808
10/13/2019 14:40	12.353	6.17735
10/13/2019 14:40	12.3098	6.23695
10/13/2019 14:41	12.3118	6.21098
10/13/2019 14:41	12.2117	6.28518
10/13/2019 14:42	12.347	6.18856
10/13/2019 14:42	12.4572	6.11657
10/13/2019 14:43	12.3388	6.20861
10/13/2019 14:43	12.4342	6.11942
10/13/2019 14:44	12.2901	6.24382
10/13/2019 14:44	12.2435	6.26158
10/13/2019 14:45	12.2631	6.25581
10/13/2019 14:45	12.1975	6.27949
10/13/2019 14:46	12.3787	6.1843
10/13/2019 14:46	12.1887	6.29891
10/13/2019 14:47	12.3463	6.19275
10/13/2019 14:47	12.28	6.24279
10/13/2019 14:48	12.4856	6.1011
10/13/2019 14:48	12.4396	6.14491
10/13/2019 14:49	12.5153	6.06748
10/13/2019 14:49	12.3618	6.18477
10/13/2019 14:50	12.4633	6.10758
10/13/2019 14:50	12.3977	6.1648
10/13/2019 14:51	12.4119	6.13923
10/13/2019 14:51	12.4964	6.1045
10/13/2019 14:52	12.4491	6.12376
10/13/2019 14:52	12.5627	6.04585
10/13/2019 14:53	12.3172	6.21611
10/13/2019 14:53	12.5383	6.06377
10/13/2019 14:54	12.5627	6.04751
10/13/2019 14:54	12.5465	6.0513
10/13/2019 14:55	12.516	6.09645
10/13/2019 14:55	12.56	6.04774
10/13/2019 14:56	12.7176	5.95066
10/13/2019 14:56	12.5789	6.03401
10/13/2019 14:57	12.6154	6.01909

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 14:57	12.4896	6.10324
10/13/2019 14:58	12.5512	6.06614
10/13/2019 14:58	12.257	6.272
10/13/2019 14:59	12.2942	6.23284
10/13/2019 14:59	11.9763	6.4406
10/13/2019 15:00	11.908	6.49427
10/13/2019 15:00	11.9067	6.52853
10/13/2019 15:01	11.674	6.65419
10/13/2019 15:01	11.8566	6.52174
10/13/2019 15:02	11.6795	6.66311
10/13/2019 15:02	11.9317	6.46049
10/13/2019 15:03	11.9047	6.50248
10/13/2019 15:03	11.9168	6.47675
10/13/2019 15:04	11.6504	6.7231
10/13/2019 15:04	11.7674	6.59436
10/13/2019 15:05	11.7708	6.60888
10/13/2019 15:05	11.8357	6.54968
10/13/2019 15:06	11.952	6.47478
10/13/2019 15:06	11.8776	6.52364
10/13/2019 15:07	12.1251	6.34059
10/13/2019 15:07	11.9033	6.49072
10/13/2019 15:08	12.1116	6.35227
10/13/2019 15:08	12.0237	6.4196
10/13/2019 15:09	12.1197	6.34888
10/13/2019 15:09	12.1745	6.33348
10/13/2019 15:10	12.0244	6.41139
10/13/2019 15:10	12.2462	6.263
10/13/2019 15:11	12.0859	6.36845
10/13/2019 15:11	12.2699	6.23932
10/13/2019 15:12	12.1637	6.32291
10/13/2019 15:12	12.2056	6.27823
10/13/2019 15:13	12.2962	6.24697
10/13/2019 15:13	12.2888	6.22771
10/13/2019 15:14	12.3808	6.19725
10/13/2019 15:14	12.0737	6.38061
10/13/2019 15:15	12.1454	6.34793
10/13/2019 15:15	11.9628	6.46459
10/13/2019 15:16	12.2124	6.29212
10/13/2019 15:16	12.046	6.40208
10/13/2019 15:17	12.184	6.30712
10/13/2019 15:17	12.0359	6.40003
10/13/2019 15:18	12.2922	6.22448
10/13/2019 15:18	12.1414	6.33964
10/13/2019 15:19	12.3294	6.20285
10/13/2019 15:19	12.3104	6.23569
10/13/2019 15:20	12.2279	6.27042

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 15:20	12.4416	6.14144
10/13/2019 15:21	12.3098	6.22882
10/13/2019 15:21	12.374	6.09724
10/13/2019 15:22	12.1779	6.22266
10/13/2019 15:22	12.3287	6.12178
10/13/2019 15:23	12.1806	6.22858
10/13/2019 15:23	12.2489	6.16173
10/13/2019 15:24	12.3111	6.08113
10/13/2019 15:24	12.3612	6.04577
10/13/2019 15:25	12.4991	5.95634
10/13/2019 15:25	12.2239	6.18122
10/13/2019 15:26	12.4078	6.10371
10/13/2019 15:26	12.2259	6.224
10/13/2019 15:27	12.3361	6.05856
10/13/2019 15:27	12.3375	6.06629
10/13/2019 15:28	12.3923	6.02564
10/13/2019 15:28	12.2949	6.11429
10/13/2019 15:29	12.2171	6.19006
10/13/2019 15:29	12.3077	6.14444
10/13/2019 15:30	12.1414	6.25376
10/13/2019 15:30	12.3679	6.07956
10/13/2019 15:31	12.2225	6.13694
10/13/2019 15:31	12.2164	6.13055
10/13/2019 15:32	12.4011	6.02438
10/13/2019 15:32	12.2367	6.12328
10/13/2019 15:33	20.7349	0.061884
10/13/2019 15:33	21.0237	-9.87E-03
10/13/2019 15:34	21.0298	-0.01752
10/13/2019 15:34	21.0352	-0.02542
10/13/2019 15:35	21.0413	-0.02376
10/13/2019 15:35	21.0332	-0.01058
10/13/2019 15:36	21.0399	-0.02747
10/13/2019 15:36	21.042	-0.03299
10/13/2019 15:37	21.048	-0.03544
10/13/2019 15:37	21.0284	-0.0221
10/13/2019 15:38	21.0474	-0.03007
10/13/2019 15:38	21.0487	-0.02005
10/13/2019 15:39	13.1558	6.17341
10/13/2019 15:39	12.1941	6.20609
10/13/2019 15:40	12.2218	6.20932
10/13/2019 15:40	12.1576	6.24634
10/13/2019 15:41	12.3307	6.1307
10/13/2019 15:41	12.0643	6.31351
10/13/2019 15:42	12.2543	6.16867
10/13/2019 15:42	12.0724	6.28502
10/13/2019 15:43	12.2462	6.18738

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 15:43	12.1305	6.24555
10/13/2019 15:44	12.1928	6.23971
10/13/2019 15:44	12.2881	6.18919
10/13/2019 15:45	12.2415	6.19409
10/13/2019 15:45	12.3537	6.13994
10/13/2019 15:46	12.1752	6.25716
10/13/2019 15:46	12.3632	6.14594
10/13/2019 15:47	12.2442	6.20395
10/13/2019 15:47	12.4362	6.08232
10/13/2019 15:48	12.3185	6.16394
10/13/2019 15:48	12.3084	6.17333
10/13/2019 15:49	12.2861	6.20893
10/13/2019 15:49	12.1846	6.28636
10/13/2019 15:50	12.3625	6.17317
10/13/2019 15:50	12.2218	6.26592
10/13/2019 15:51	12.3564	6.16488
10/13/2019 15:51	12.3077	6.23505
10/13/2019 15:52	12.418	6.15186
10/13/2019 15:52	12.1393	6.3473
10/13/2019 15:53	12.0196	6.40452
10/13/2019 15:53	12.1691	6.32938
10/13/2019 15:54	12.1008	6.36048
10/13/2019 15:54	11.9946	6.44273
10/13/2019 15:55	12.0791	6.37271
10/13/2019 15:55	12.113	6.37508
10/13/2019 15:56	12.0284	6.4001
10/13/2019 15:56	11.9635	6.423
10/13/2019 15:57	12.0014	6.42481
10/13/2019 15:57	12.0541	6.39545
10/13/2019 15:58	11.975	6.41976
10/13/2019 15:58	12.0832	6.3634
10/13/2019 15:59	11.9743	6.44012
10/13/2019 15:59	12.0149	6.4035
10/13/2019 16:00	12.0237	6.41139
10/13/2019 16:00	12.0947	6.35811
10/13/2019 16:01	12.0994	6.3649
10/13/2019 16:01	11.9581	6.43507
10/13/2019 16:02	12.0474	6.39387
10/13/2019 16:02	11.9953	6.41597
10/13/2019 16:03	12.3165	6.20459
10/13/2019 16:03	12.1312	6.33104
10/13/2019 16:04	12.2908	6.23505
10/13/2019 16:04	12.2076	6.26994
10/13/2019 16:05	12.2881	6.22061
10/13/2019 16:05	12.0947	6.38519
10/13/2019 16:06	12.1028	6.35645

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 16:06	12.2759	6.25834
10/13/2019 16:07	12.0886	6.35211
10/13/2019 16:07	12.1711	6.30783
10/13/2019 16:08	12.1055	6.34825
10/13/2019 16:08	12.2814	6.24208
10/13/2019 16:09	12.1082	6.3548
10/13/2019 16:09	11.9317	6.4807
10/13/2019 16:10	12.1319	6.34059
10/13/2019 16:10	12.0913	6.3443
10/13/2019 16:11	12.1522	6.31746
10/13/2019 16:11	12.14	6.33033
10/13/2019 16:12	12.1772	6.3042
10/13/2019 16:12	12.2597	6.24208
10/13/2019 16:13	12.0764	6.36727
10/13/2019 16:13	12.2942	6.22203
10/13/2019 16:14	12.2726	6.2304
10/13/2019 16:14	12.2726	6.239
10/13/2019 16:15	12.1779	6.28526
10/13/2019 16:15	12.2773	6.23411
10/13/2019 16:16	12.2394	6.2536
10/13/2019 16:16	12.351	6.17696
10/13/2019 16:17	12.2563	6.24145
10/13/2019 16:17	12.3023	6.22069
10/13/2019 16:18	11.9797	6.42402
10/13/2019 16:18	12.255	6.24729
10/13/2019 16:19	12.1082	6.35598
10/13/2019 16:19	12.0541	6.37122
10/13/2019 16:20	12.2178	6.25747
10/13/2019 16:20	12.3503	6.18043
10/13/2019 16:21	12.4464	6.11231
10/13/2019 16:21	12.4829	6.0629
10/13/2019 16:22	12.5268	6.05643
10/13/2019 16:22	12.4376	6.11365
10/13/2019 16:23	12.5593	6.0348
10/13/2019 16:23	12.2171	6.25321
10/13/2019 16:24	12.3503	6.18509
10/13/2019 16:24	12.2529	6.24397
10/13/2019 16:25	12.3605	6.15391
10/13/2019 16:25	12.255	6.23561
10/13/2019 16:26	12.2908	6.20245
10/13/2019 16:26	12.3679	6.14546
10/13/2019 16:27	12.3625	6.10647
10/13/2019 16:27	12.4761	6.04009
10/13/2019 16:28	12.3882	6.10789
10/13/2019 16:28	12.4775	6.06298
10/13/2019 16:29	12.3158	6.16007

TIME	O2	CO2
10/13/2019 16:29	12.4382	6.08263
10/13/2019 16:30	12.3077	6.19717
10/13/2019 16:30	12.4328	6.08847
10/13/2019 16:31	12.3923	6.13441
10/13/2019 16:31	12.4829	6.06582
10/13/2019 16:32	12.33	6.18951
10/13/2019 16:32	12.2489	6.19133
10/13/2019 16:33	12.3422	6.15967
10/13/2019 16:33	12.1907	6.2195
10/13/2019 16:34	12.3118	6.15486
10/13/2019 16:34	12.2908	6.17451
10/13/2019 16:35	12.4301	6.07877
10/13/2019 16:35	12.2448	6.20601
10/13/2019 16:36	12.3152	6.15265
10/13/2019 16:36	12.2712	6.19219
10/13/2019 16:37	12.2719	6.16915
10/13/2019 16:37	12.2239	6.22724
10/13/2019 16:38	12.3003	6.1663
10/13/2019 16:38	12.1332	6.26394
10/13/2019 16:39	12.4126	6.07427
10/13/2019 16:39	12.3882	6.11239
10/13/2019 16:40	12.257	6.18556
10/13/2019 16:40	12.2056	6.2349
10/13/2019 16:41	12.1549	6.25447
10/13/2019 16:41	12.1549	6.27207
10/13/2019 16:42	12.0555	6.3282
10/13/2019 16:42	12.1542	6.25802
10/13/2019 16:43	12.2387	6.20648
10/13/2019 16:43	12.2178	6.22669
10/13/2019 16:44	12.207	6.22677
10/13/2019 16:44	12.2103	6.2349
10/13/2019 16:45	12.0933	6.30175
10/13/2019 16:45	12.0893	6.30965
10/13/2019 16:46	12.1508	6.26592
10/13/2019 16:46	12.1508	6.26244
10/13/2019 16:47	12.0643	6.32535
10/13/2019 16:47	12.0528	6.36159
10/13/2019 16:48	12.1204	6.28455
10/13/2019 16:48	12.303	6.18169
10/13/2019 16:49	12.0616	6.31967
10/13/2019 16:49	12.2137	6.61394
10/13/2019 16:50	12.1217	6.67921
10/13/2019 16:50	12.2374	6.55118
10/13/2019 16:51	12.069	6.71158
10/13/2019 16:51	12.2651	6.55916
10/13/2019 16:52	12.1867	6.63848

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 16:52	12.0791	6.7096
10/13/2019 16:53	12.0832	6.72279
10/13/2019 16:53	12.0683	6.72697
10/13/2019 16:54	12.1535	6.65459
10/13/2019 16:54	12.1867	6.61804
10/13/2019 16:55	12.115	6.70747
10/13/2019 16:55	12.0244	6.76344
10/13/2019 16:56	12.0176	6.73976
10/13/2019 16:56	11.9831	6.77496
10/13/2019 16:57	12.0582	6.72902
10/13/2019 16:57	12.0994	6.69169
10/13/2019 16:58	12.0176	6.76517
10/13/2019 16:58	11.996	6.7883
10/13/2019 16:59	11.8905	6.88586
10/13/2019 16:59	11.9128	6.83921
10/13/2019 17:00	11.858	6.90394
10/13/2019 17:00	11.9364	6.83992
10/13/2019 17:01	11.8391	6.92865
10/13/2019 17:01	12.0102	6.7602
10/13/2019 17:02	11.9824	6.80938
10/13/2019 17:02	12.2367	6.57107
10/13/2019 17:03	12.2063	6.61315
10/13/2019 17:03	12.3348	6.48725
10/13/2019 17:04	12.3672	6.49806
10/13/2019 17:04	12.3348	6.50098
10/13/2019 17:05	12.3645	6.47785
10/13/2019 17:05	12.5302	6.35622
10/13/2019 17:06	12.4727	6.39
10/13/2019 17:06	12.6479	6.25645
10/13/2019 17:07	12.541	6.34548
10/13/2019 17:07	12.5018	6.37556
10/13/2019 17:08	12.3828	6.45094
10/13/2019 17:08	12.4322	6.42134
10/13/2019 17:09	12.1752	6.63943
10/13/2019 17:09	12.2381	6.58007
10/13/2019 17:10	11.8776	6.90765
10/13/2019 17:10	11.9993	6.7707
10/13/2019 17:11	11.7694	6.94538
10/13/2019 17:11	11.8025	6.91862
10/13/2019 17:12	11.86	6.87568
10/13/2019 17:12	12.1021	6.67582
10/13/2019 17:13	12.0102	6.77394
10/13/2019 17:13	12.0108	6.76541
10/13/2019 17:14	11.8729	6.87481
10/13/2019 17:14	11.9107	6.85524
10/13/2019 17:15	11.6808	7.05541

TIME	O2	CO2
10/13/2019 17:15	11.7809	6.97206
10/13/2019 17:16	11.6565	7.05597
10/13/2019 17:16	11.7011	7.03797
10/13/2019 17:17	11.4712	7.20547
10/13/2019 17:17	11.6504	7.0742
10/13/2019 17:18	11.5415	7.14287
10/13/2019 17:18	11.8343	6.92304
10/13/2019 17:19	11.7099	7.0015
10/13/2019 17:19	11.7701	6.95659
10/13/2019 17:20	11.4962	7.15637
10/13/2019 17:20	11.8073	6.92123
10/13/2019 17:21	11.668	7.05525
10/13/2019 17:21	11.8648	6.88113
10/13/2019 17:22	11.5963	7.07917
10/13/2019 17:22	11.718	7.00071
10/13/2019 17:23	11.5855	7.12251
10/13/2019 17:23	11.7552	6.97545
10/13/2019 17:24	11.6713	7.05565
10/13/2019 17:24	11.9973	6.77125
10/13/2019 17:25	11.8675	6.88105
10/13/2019 17:25	11.7755	6.94996
10/13/2019 17:26	11.668	7.04239
10/13/2019 17:26	11.8634	6.88673
10/13/2019 17:27	11.7721	6.95903
10/13/2019 17:27	11.8566	6.91025
10/13/2019 17:28	11.7173	7.00703
10/13/2019 17:28	11.9053	6.85287
10/13/2019 17:29	11.7112	7.02763
10/13/2019 17:29	11.8661	6.89833
10/13/2019 17:30	11.7613	6.96898
10/13/2019 17:30	11.9256	6.83495
10/13/2019 17:31	11.8154	6.93275
10/13/2019 17:31	11.8648	6.9026
10/13/2019 17:32	11.8316	6.92912
10/13/2019 17:32	11.6551	7.06023
10/13/2019 17:33	11.7552	7.01074
10/13/2019 17:33	11.647	7.0753
10/13/2019 17:34	11.7363	7.0075
10/13/2019 17:34	11.7119	6.99976
10/13/2019 17:35	11.9419	6.81317
10/13/2019 17:35	11.6565	7.06125
10/13/2019 17:36	11.8465	6.88878
10/13/2019 17:36	11.7207	6.99645
10/13/2019 17:37	11.9364	6.80093
10/13/2019 17:37	11.8046	6.94901
10/13/2019 17:38	11.7775	6.96598

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/13/2019 17:38	11.6585	7.07499
10/13/2019 17:39	11.814	6.9228
10/13/2019 17:39	11.6369	7.06189
10/13/2019 17:40	11.7931	6.93283
10/13/2019 17:40	11.7478	6.96148
End Run 1	**12.438**	**6.181**
10/13/2019 17:41	11.8377	6.90899
10/13/2019 17:41	11.743	6.98808
10/13/2019 17:42	11.7058	7.02502
10/13/2019 17:42	11.7349	7.01097
10/13/2019 17:43	11.691	7.00087
10/13/2019 17:43	11.5388	7.12843
10/13/2019 17:44	11.6179	7.06678
10/13/2019 17:44	10.0773	10.5455
10/13/2019 17:45	10.0253	10.1649
10/13/2019 17:45	10.0212	10.1942
10/13/2019 17:46	10.0185	10.1752
10/13/2019 17:46	9.7446	3.94819
10/13/2019 17:47	0.041045	-0.01918
10/13/2019 17:47	0.028603	-0.03347
10/13/2019 17:48	11.9736	6.45457
10/13/2019 17:48	12.2151	6.3237
10/13/2019 17:49	11.996	6.49017
10/13/2019 17:49	12.0048	6.49419
10/13/2019 17:50	11.9905	6.50343
10/13/2019 17:50	12.002	6.48417
10/14/2019 10:15	10.5271	9.10864
10/14/2019 10:15	10.473	9.19902
10/14/2019 10:16	10.4371	9.2339
10/14/2019 10:16	10.4669	9.39256
10/14/2019 10:17	10.4053	10.0892
10/14/2019 10:17	10.333	10.0844
10/14/2019 10:18	10.3134	10.1192
10/14/2019 10:18	11.7538	7.10877
10/14/2019 10:19	2.85839	0.106087
10/14/2019 10:19	0.05227	-0.02186
10/14/2019 10:20	0.04375	-0.03513
10/14/2019 10:20	0.03692	-0.04412
10/14/2019 10:21	0.033471	-0.04531
10/14/2019 10:21	0.031443	-0.04515
10/14/2019 10:22	0.027115	-0.04799
10/14/2019 10:22	10.2248	7.04957
10/14/2019 10:23	11.7836	7.04799
10/14/2019 10:23	11.8194	7.01934
10/14/2019 10:24	12.2401	6.66082

TIME	O2	CO2
10/14/2019 10:24	12.5877	6.45465
10/14/2019 10:25	12.5032	6.49664
10/14/2019 10:25	12.5762	6.48164
Run 2		
10/14/2019 10:35	12.817	6.30878
10/14/2019 10:35	12.7615	6.32417
10/14/2019 10:36	12.8988	6.21335
10/14/2019 10:36	12.8129	6.30081
10/14/2019 10:37	12.819	6.28976
10/14/2019 10:37	12.8488	6.29141
10/14/2019 10:38	12.7439	6.33846
10/14/2019 10:38	12.9015	6.21808
10/14/2019 10:39	12.7345	6.36687
10/14/2019 10:39	12.7575	6.32093
10/14/2019 10:40	12.9211	6.18193
10/14/2019 10:40	12.6499	6.4091
10/14/2019 10:41	12.7412	6.29828
10/14/2019 10:41	12.8034	6.3072
10/14/2019 10:42	12.4991	6.52237
10/14/2019 10:42	12.5451	6.52514
10/14/2019 10:43	12.6952	6.35353
10/14/2019 10:43	12.6837	6.40571
10/14/2019 10:44	12.4288	6.58394
10/14/2019 10:44	12.5627	6.48425
10/14/2019 10:45	12.3415	6.65838
10/14/2019 10:45	12.1907	6.71102
10/14/2019 10:46	12.3483	6.60541
10/14/2019 10:46	12.259	6.69847
10/14/2019 10:47	12.2895	6.63012
10/14/2019 10:47	12.3997	6.5837
10/14/2019 10:48	12.2489	6.73534
10/14/2019 10:48	12.3584	6.58584
10/14/2019 10:49	12.4092	6.59854
10/14/2019 10:49	12.0717	6.86345
10/14/2019 10:50	12.3409	6.61465
10/14/2019 10:50	12.3537	6.65711
10/14/2019 10:51	12.2218	6.6669
10/14/2019 10:51	12.4281	6.54526
10/14/2019 10:52	12.4457	6.56618
10/14/2019 10:52	12.2868	6.67203
10/14/2019 10:53	12.3233	6.64906
10/14/2019 10:53	12.4389	6.58086
10/14/2019 10:54	12.4355	6.56342
10/14/2019 10:54	12.2523	6.71687
10/14/2019 10:55	12.257	6.66011
10/14/2019 10:55	12.493	6.49143

TIME	O2	CO2
10/14/2019 10:56	12.2428	6.73447
10/14/2019 10:56	12.1278	6.73613
10/14/2019 10:57	12.3896	6.55616
10/14/2019 10:57	12.3666	6.57187
10/14/2019 10:58	12.3923	6.59633
10/14/2019 10:58	12.3902	6.56208
10/14/2019 10:59	12.2401	6.70842
10/14/2019 10:59	12.445	6.52719
10/14/2019 11:00	12.3733	6.64062
10/14/2019 11:00	12.0893	6.78799
10/14/2019 11:01	12.3598	6.59697
10/14/2019 11:01	12.4193	6.56437
10/14/2019 11:02	12.3037	6.60573
10/14/2019 11:02	12.4382	6.55213
10/14/2019 11:03	12.4842	6.48748
10/14/2019 11:03	12.4335	6.55868
10/14/2019 11:04	12.4903	6.48006
10/14/2019 11:04	12.3909	6.61686
10/14/2019 11:05	12.2868	6.65222
10/14/2019 11:05	12.514	6.48701
10/14/2019 11:06	12.4376	6.58339
10/14/2019 11:06	12.3537	6.60407
10/14/2019 11:07	12.4477	6.53484
10/14/2019 11:07	12.5647	6.46633
10/14/2019 11:08	12.1711	6.80953
10/14/2019 11:08	12.2333	6.68545
10/14/2019 11:09	12.5066	6.49356
10/14/2019 11:09	12.539	6.49759
10/14/2019 11:10	12.493	6.53358
10/14/2019 11:10	12.4491	6.58181
10/14/2019 11:11	12.2793	6.61544
10/14/2019 11:11	12.3043	6.65206
10/14/2019 11:12	12.5187	6.46223
10/14/2019 11:12	12.2834	6.67527
10/14/2019 11:13	12.1616	6.72389
10/14/2019 11:13	12.0528	6.91096
10/14/2019 11:14	11.8377	7.00655
10/14/2019 11:14	12.0771	6.78791
10/14/2019 11:15	11.8343	7.07751
10/14/2019 11:15	11.6091	7.30847
10/14/2019 11:16	11.741	7.10119
10/14/2019 11:16	11.9317	6.96527
10/14/2019 11:17	11.6436	7.22702
10/14/2019 11:17	11.6625	7.15653
10/14/2019 11:18	11.9385	6.94183
10/14/2019 11:18	12.0413	6.78704

TIME	O2	CO2
10/14/2019 11:19	11.6598	7.20578
10/14/2019 11:19	11.6646	7.14658
10/14/2019 11:20	11.9243	6.96669
10/14/2019 11:20	11.9412	6.93867
10/14/2019 11:21	12.1035	6.82982
10/14/2019 11:21	12.2577	6.68521
10/14/2019 11:22	12.0007	6.93188
10/14/2019 11:22	11.7795	7.10451
10/14/2019 11:23	11.9818	6.89794
10/14/2019 11:23	11.9121	7.02455
10/14/2019 11:24	11.6409	7.17855
10/14/2019 11:24	11.8925	6.95201
10/14/2019 11:25	12.0007	6.92778
10/14/2019 11:25	11.8391	7.07317
10/14/2019 11:26	11.9669	6.92225
10/14/2019 11:26	12.1786	6.80796
10/14/2019 11:27	11.8695	7.0401
10/14/2019 11:27	11.8384	7.03347
10/14/2019 11:28	11.95	6.92683
10/14/2019 11:28	11.9594	6.96061
10/14/2019 11:29	11.8769	7.02258
10/14/2019 11:29	11.9534	6.86455
10/14/2019 11:30	12.1535	6.7561
10/14/2019 11:30	11.9723	6.8921
10/14/2019 11:31	11.9865	6.90094
10/14/2019 11:31	12.1204	6.7703
10/14/2019 11:32	12.119	6.87165
10/14/2019 11:32	11.814	7.03465
10/14/2019 11:33	12.0027	6.85413
10/14/2019 11:33	11.9973	6.89265
10/14/2019 11:34	11.7924	7.04973
10/14/2019 11:34	11.9878	6.91499
10/14/2019 11:35	11.9162	6.92541
10/14/2019 11:35	11.9277	6.9438
10/14/2019 11:36	11.8485	7.05904
10/14/2019 11:36	11.8992	6.97601
10/14/2019 11:37	12.0264	6.82769
10/14/2019 11:37	11.8783	6.98256
10/14/2019 11:38	11.7072	7.05825
10/14/2019 11:38	12.021	6.73763
10/14/2019 11:39	12.2036	6.68735
10/14/2019 11:39	11.789	6.99992
10/14/2019 11:40	11.8093	6.96961
10/14/2019 11:40	12.0108	6.77362
10/14/2019 11:41	12.2557	6.60746
10/14/2019 11:41	12.2624	6.70013

TIME	O2	CO2
10/14/2019 11:42	11.7951	7.12077
10/14/2019 11:42	11.7464	7.0667
10/14/2019 11:43	12.021	6.92888
10/14/2019 11:43	11.8052	7.10451
10/14/2019 11:44	11.766	7.06575
10/14/2019 11:44	11.9189	6.93117
10/14/2019 11:45	12.1515	6.80314
10/14/2019 11:45	11.8634	7.05968
10/14/2019 11:46	11.8357	6.9633
10/14/2019 11:46	12.0244	6.8962
10/14/2019 11:47	11.7505	7.14516
10/14/2019 11:47	11.5645	7.27572
10/14/2019 11:48	11.7214	7.08596
10/14/2019 11:48	12.1447	6.74544
10/14/2019 11:49	12.3199	6.66737
10/14/2019 11:49	11.8458	7.03205
10/14/2019 11:50	11.8661	6.95406
10/14/2019 11:50	12.0399	6.9097
10/14/2019 11:51	11.6673	7.19252
10/14/2019 11:51	11.7532	7.06094
10/14/2019 11:52	11.9933	6.8947
10/14/2019 11:52	11.902	7.00916
10/14/2019 11:53	11.8337	7.09622
10/14/2019 11:53	12.0061	6.85208
10/14/2019 11:54	12.2651	6.71797
10/14/2019 11:54	12.0589	6.8835
10/14/2019 11:55	11.9182	6.95161
10/14/2019 11:55	12.0156	6.85484
10/14/2019 11:56	12.1529	6.79556
10/14/2019 11:56	11.8222	7.06859
10/14/2019 11:57	11.8154	7.05612
10/14/2019 11:57	12.1042	6.79888
10/14/2019 11:58	12.1136	6.85571
10/14/2019 11:58	11.879	7.04452
10/14/2019 11:59	11.9574	6.89013
10/14/2019 11:59	12.0616	6.90102
10/14/2019 12:00	12.2523	6.70826
10/14/2019 12:00	12.424	6.5942
10/14/2019 12:01	12.0967	6.81206
10/14/2019 12:01	12.2631	6.67614
10/14/2019 12:02	12.1278	6.83187
10/14/2019 12:02	12.2347	6.66445
10/14/2019 12:03	12.5776	6.42308
10/14/2019 12:03	12.7629	6.34611
10/14/2019 12:04	12.6689	6.36901
10/14/2019 12:04	12.7852	6.25463

TIME	O2	CO2
10/14/2019 12:05	12.8068	6.24137
10/14/2019 12:05	13.0469	6.06487
10/14/2019 12:06	12.934	6.15604
10/14/2019 12:06	12.9921	6.07577
10/14/2019 12:07	12.9326	6.20348
10/14/2019 12:07	12.8819	6.16875
10/14/2019 12:08	13.0692	6.05295
10/14/2019 12:08	12.9894	6.09258
10/14/2019 12:09	13.2883	5.8988
10/14/2019 12:09	13.0591	6.11886
10/14/2019 12:10	12.9441	6.13639
10/14/2019 12:10	13.1254	6.04317
10/14/2019 12:11	12.8738	6.2495
10/14/2019 12:11	12.8264	6.23395
10/14/2019 12:12	12.7263	6.31028
10/14/2019 12:12	12.4667	6.53421
10/14/2019 12:13	12.6689	6.31683
10/14/2019 12:13	12.6526	6.38819
10/14/2019 12:14	12.6296	6.41621
10/14/2019 12:14	12.8596	6.25124
10/14/2019 12:15	12.6831	6.42031
10/14/2019 12:15	12.4518	6.53248
10/14/2019 12:16	12.5194	6.45923
10/14/2019 12:16	12.8373	6.21224
10/14/2019 12:17	12.9333	6.25147
10/14/2019 12:17	12.6188	6.37792
10/14/2019 12:18	12.7554	6.30025
10/14/2019 12:18	13.0381	6.07135
10/14/2019 12:19	12.7676	6.33869
10/14/2019 12:19	12.3077	6.64306
10/14/2019 12:20	12.3706	6.61694
10/14/2019 12:20	12.0534	6.86037
10/14/2019 12:21	11.9371	6.86929
10/14/2019 12:21	12.0683	6.81395
10/14/2019 12:22	12.3977	6.52932
10/14/2019 12:22	12.7047	6.36174
10/14/2019 12:23	12.3794	6.54321
10/14/2019 12:23	12.1089	6.82469
10/14/2019 12:24	12.2245	6.65072
10/14/2019 12:24	12.5627	6.40981
10/14/2019 12:25	12.236	6.75365
10/14/2019 12:25	12.002	6.90962
10/14/2019 12:26	12.2529	6.6643
10/14/2019 12:26	12.4572	6.51266
10/14/2019 12:27	12.6242	6.38187
10/14/2019 12:27	12.8318	6.23229

TIME	O2	CO2
10/14/2019 12:28	12.8318	6.31446
10/14/2019 12:28	12.6148	6.36024
10/14/2019 12:29	12.5945	6.44644
10/14/2019 12:29	12.6662	6.34825
10/14/2019 12:30	12.8616	6.23079
10/14/2019 12:30	12.2949	6.73013
10/14/2019 12:31	11.9696	6.99013
10/14/2019 12:31	11.9006	6.97293
10/14/2019 12:32	11.9892	6.8876
10/14/2019 12:32	11.998	6.93417
10/14/2019 12:33	11.7322	7.13664
10/14/2019 12:33	11.6734	7.16095
10/14/2019 12:34	11.9344	6.89218
10/14/2019 12:34	11.8073	7.08343
10/14/2019 12:35	11.7714	7.05612
10/14/2019 12:35	11.9953	6.87615
10/14/2019 12:36	11.7937	7.05107
10/14/2019 12:36	11.9648	6.95296
10/14/2019 12:37	11.8553	6.98492
10/14/2019 12:37	11.7883	7.00103
10/14/2019 12:38	11.5111	7.29798
10/14/2019 12:38	11.5165	7.22054
10/14/2019 12:39	11.8634	6.98185
10/14/2019 12:39	11.6152	7.17342
10/14/2019 12:40	11.3758	7.34052
10/14/2019 12:40	11.6423	7.1405
10/14/2019 12:41	11.9574	6.88247
10/14/2019 12:41	11.7444	7.10893
10/14/2019 12:42	11.5936	7.23065
10/14/2019 12:42	11.7836	7.04231
10/14/2019 12:43	12.0095	6.89534
10/14/2019 12:43	11.7342	7.13948
10/14/2019 12:44	11.5138	7.26088
10/14/2019 12:44	11.7106	7.10554
10/14/2019 12:45	11.6477	7.15282
10/14/2019 12:45	11.4725	7.30611
10/14/2019 12:46	11.6294	7.1454
10/14/2019 12:46	11.8938	6.90828
10/14/2019 12:47	11.8404	7.03773
10/14/2019 12:47	11.9013	6.96203
10/14/2019 12:48	11.9885	6.88792
10/14/2019 12:48	12.0501	6.87971
10/14/2019 12:49	11.5976	7.25559
10/14/2019 12:49	11.7146	7.11667
10/14/2019 12:50	11.8276	7.10735
10/14/2019 12:50	11.4813	7.27335

TIME	O2	CO2
10/14/2019 12:51	11.6084	7.20783
10/14/2019 12:51	11.8147	7.01381
10/14/2019 12:52	11.8039	7.0251
10/14/2019 12:52	11.9229	6.93275
10/14/2019 12:53	11.9398	6.97103
10/14/2019 12:53	12.0359	6.8404
10/14/2019 12:54	11.8411	7.01863
10/14/2019 12:54	11.4076	7.34123
10/14/2019 12:55	11.7965	6.99361
10/14/2019 12:55	11.8424	7.02163
10/14/2019 12:56	11.6105	7.14769
10/14/2019 12:56	11.8323	6.96922
10/14/2019 12:57	11.9554	6.88681
10/14/2019 12:57	12.1008	6.77907
10/14/2019 12:58	11.9973	6.92983
10/14/2019 12:58	11.7106	7.19797
10/14/2019 12:59	11.532	7.24927
10/14/2019 12:59	11.9933	6.84
10/14/2019 13:00	12.4038	6.60099
10/14/2019 13:00	12.0196	6.87387
10/14/2019 13:01	11.8039	7.02447
10/14/2019 13:01	11.9791	6.88642
10/14/2019 13:02	12.0974	6.81751
10/14/2019 13:02	12.1982	6.67298
10/14/2019 13:03	12.2786	6.65269
10/14/2019 13:03	11.6659	7.14855
10/14/2019 13:04	11.7491	7.1139
10/14/2019 13:04	11.9547	6.88586
10/14/2019 13:05	12.1556	6.7156
10/14/2019 13:05	11.8573	7.07009
10/14/2019 13:06	11.7261	7.11035
10/14/2019 13:06	11.8742	6.99921
10/14/2019 13:07	12.0068	6.84726
10/14/2019 13:07	12.2036	6.73826
10/14/2019 13:08	12.0575	6.83574
10/14/2019 13:08	11.7708	7.06765
10/14/2019 13:09	11.9588	6.90252
10/14/2019 13:09	12.1082	6.84277
10/14/2019 13:10	12.1562	6.7913
10/14/2019 13:10	11.7829	7.02108
10/14/2019 13:11	11.6456	7.17334
10/14/2019 13:11	11.9993	6.84245
10/14/2019 13:12	12.2854	6.6081
10/14/2019 13:12	12.1136	6.72942
10/14/2019 13:13	11.8039	6.9839
10/14/2019 13:13	11.9087	6.90946

TIME	O2	CO2
10/14/2019 13:14	12.2097	6.64701
10/14/2019 13:14	12.3584	6.58599
10/14/2019 13:15	12.2543	6.72784
10/14/2019 13:15	11.9594	6.89983
10/14/2019 13:16	12.14	6.73794
10/14/2019 13:16	12.2205	6.67172
10/14/2019 13:17	12.2482	6.69192
10/14/2019 13:17	11.8445	7.08841
10/14/2019 13:18	11.908	6.90086
10/14/2019 13:18	12.2854	6.62436
10/14/2019 13:19	12.14	6.76952
10/14/2019 13:19	11.9506	6.92707
10/14/2019 13:20	11.9168	6.91688
10/14/2019 13:20	12.2435	6.66351
10/14/2019 13:21	12.3233	6.65419
10/14/2019 13:21	11.9763	6.88342
10/14/2019 13:22	11.881	6.97024
10/14/2019 13:22	12.2103	6.68221
10/14/2019 13:23	12.2577	6.74331
10/14/2019 13:23	11.9736	6.89715
10/14/2019 13:24	12.0311	6.87
10/14/2019 13:24	12.2178	6.68442
10/14/2019 13:25	12.3841	6.53761
10/14/2019 13:25	12.7845	6.24666
10/14/2019 13:26	12.9691	6.22345
10/14/2019 13:26	12.3754	6.58126
10/14/2019 13:27	12.3503	6.56381
10/14/2019 13:27	12.4092	6.55774
10/14/2019 13:28	12.4491	6.55584
10/14/2019 13:28	12.0602	6.85034
10/14/2019 13:29	12.1028	6.69295
10/14/2019 13:29	12.3057	6.59728
10/14/2019 13:30	12.1758	6.68364
10/14/2019 13:30	12.0724	6.8314
10/14/2019 13:31	12.019	6.846
10/14/2019 13:31	12.3152	6.60383
10/14/2019 13:32	12.6743	6.33869
10/14/2019 13:32	12.4917	6.58852
10/14/2019 13:33	12.1549	6.73826
10/14/2019 13:33	12.2151	6.68458
10/14/2019 13:34	12.0156	6.87868
10/14/2019 13:34	12.3213	6.5856
10/14/2019 13:35	12.1914	6.7235
10/14/2019 13:35	12.3246	6.56018
10/14/2019 13:36	12.5843	6.44012
10/14/2019 13:36	12.2996	6.62017

TIME	O2	CO2
10/14/2019 13:37	12.4335	6.53666
10/14/2019 13:37	12.4795	6.51416
10/14/2019 13:38	12.2726	6.64069
10/14/2019 13:38	12.4592	6.49704
10/14/2019 13:39	12.6594	6.35409
10/14/2019 13:39	12.6296	6.40997
10/14/2019 13:40	12.3612	6.57179
10/14/2019 13:40	12.2895	6.64006
10/14/2019 13:41	12.4754	6.48275
10/14/2019 13:41	12.6986	6.39229
10/14/2019 13:42	12.1691	6.71821
10/14/2019 13:42	12.1806	6.75207
10/14/2019 13:43	12.3152	6.60012
10/14/2019 13:43	12.4741	6.5054
10/14/2019 13:44	12.0933	6.7632
10/14/2019 13:44	12.213	6.66106
10/14/2019 13:45	12.305	6.62041
10/14/2019 13:45	12.5066	6.42213
10/14/2019 13:46	12.8968	6.18643
10/14/2019 13:46	12.8819	6.19354
10/14/2019 13:47	12.5025	6.49317
10/14/2019 13:47	12.4842	6.43689
10/14/2019 13:48	12.7284	6.30388
10/14/2019 13:48	12.7595	6.28881
10/14/2019 13:49	12.5045	6.49301
10/14/2019 13:49	12.4396	6.51969
10/14/2019 13:50	12.652	6.38108
10/14/2019 13:50	12.5241	6.4968
10/14/2019 13:51	12.2205	6.64141
10/14/2019 13:51	12.2685	6.62017
10/14/2019 13:52	12.6716	6.32204
10/14/2019 13:52	12.7622	6.32899
10/14/2019 13:53	12.4477	6.47707
10/14/2019 13:53	12.6019	6.36237
10/14/2019 13:54	12.7737	6.26757
10/14/2019 13:54	12.512	6.45275
10/14/2019 13:55	12.9955	6.00299
10/14/2019 13:55	13.3147	5.86478
10/14/2019 13:56	12.8332	6.22566
10/14/2019 13:56	12.5025	6.4702
10/14/2019 13:57	12.094	6.84647
10/14/2019 13:57	11.6172	7.21589
10/14/2019 13:58	11.4813	7.31826
10/14/2019 13:58	11.1797	7.5407
10/14/2019 13:59	11.2027	7.55396
10/14/2019 13:59	11.3785	7.37588

TIME	O2	CO2
10/14/2019 14:00	11.4813	7.32545
10/14/2019 14:00	11.4333	7.32221
10/14/2019 14:01	11.2473	7.56327
10/14/2019 14:01	11.0235	7.59848
10/14/2019 14:02	11.2419	7.43429
10/14/2019 14:02	11.0742	7.60637
10/14/2019 14:03	11.2703	7.42806
10/14/2019 14:03	11.4401	7.34163
10/14/2019 14:04	11.0803	7.61434
10/14/2019 14:04	10.8429	7.78902
10/14/2019 14:05	11.0079	7.63581
10/14/2019 14:05	11.2696	7.47818
10/14/2019 14:06	11.1682	7.50557
10/14/2019 14:06	11.2723	7.48276
10/14/2019 14:07	10.9721	7.7134
10/14/2019 14:07	10.9058	7.71609
10/14/2019 14:08	10.9511	7.69375
10/14/2019 14:08	11.2886	7.45829
10/14/2019 14:09	11.4137	7.40485
10/14/2019 14:09	10.8043	7.85604
10/14/2019 14:10	10.8091	7.80355
10/14/2019 14:10	11.2534	7.41306
10/14/2019 14:11	11.5753	7.21273
10/14/2019 14:11	11.2392	7.477
10/14/2019 14:12	11.1181	7.58711
10/14/2019 14:12	11.3954	7.36712
10/14/2019 14:13	11.3467	7.44787
10/14/2019 14:13	11.1513	7.53391
10/14/2019 14:14	11.4157	7.39625
10/14/2019 14:14	11.3014	7.48465
10/14/2019 14:15	11.4583	7.25393
10/14/2019 14:15	11.3677	7.4298
10/14/2019 14:16	11.4488	7.28653
10/14/2019 14:16	11.6037	7.13963
10/14/2019 14:17	11.4651	7.2694
10/14/2019 14:17	11.0289	7.67899
10/14/2019 14:18	11.3352	7.36191
10/14/2019 14:18	11.3325	7.42506
10/14/2019 14:19	11.2865	7.37431
10/14/2019 14:19	12.1035	6.75846
10/14/2019 14:20	11.7809	7.11572
10/14/2019 14:20	11.2311	7.45947
10/14/2019 14:21	11.1952	7.47897
10/14/2019 14:21	11.4955	7.20641
10/14/2019 14:22	11.8086	6.99329
10/14/2019 14:22	11.8127	6.94333

TIME	O2	CO2
10/14/2019 14:23	11.3352	7.44471
10/14/2019 14:23	11.2777	7.43524
10/14/2019 14:24	11.6233	7.10143
10/14/2019 14:24	11.601	7.24146
10/14/2019 14:25	11.4272	7.36633
10/14/2019 14:25	11.4204	7.34021
10/14/2019 14:26	11.6991	7.05581
10/14/2019 14:26	11.6206	7.16703
10/14/2019 14:27	11.2656	7.47637
10/14/2019 14:27	11.3291	7.37391
10/14/2019 14:28	11.6057	7.09409
10/14/2019 14:28	11.2811	7.47155
10/14/2019 14:29	11.1039	7.55585
10/14/2019 14:29	11.2947	7.37549
10/14/2019 14:30	11.4177	7.29584
10/14/2019 14:30	11.1398	7.59643
10/14/2019 14:31	11.0728	7.61663
10/14/2019 14:31	11.392	7.3541
10/14/2019 14:32	11.1371	7.60187
10/14/2019 14:32	11.0437	7.64418
10/14/2019 14:33	11.6592	7.02558
10/14/2019 14:33	12.3023	6.51148
10/14/2019 14:34	11.8938	6.96567
10/14/2019 14:34	11.5983	7.14311
10/14/2019 14:35	11.6558	7.0596
10/14/2019 14:35	11.6686	7.1248
10/14/2019 14:36	11.6822	7.11532
10/14/2019 14:36	11.766	6.99479
10/14/2019 14:37	11.7511	6.97664
10/14/2019 14:37	11.1777	7.48513
10/14/2019 14:38	11.2696	7.36175
10/14/2019 14:38	11.4827	7.23814
10/14/2019 14:39	11.741	6.96764
10/14/2019 14:39	11.81	7.02479
10/14/2019 14:40	11.5131	7.2091
10/14/2019 14:40	11.5422	7.19962
10/14/2019 14:41	11.4813	7.25275
10/14/2019 14:41	11.6037	7.18747
10/14/2019 14:42	11.8337	6.9393
10/14/2019 14:42	11.6145	7.22622
10/14/2019 14:43	11.0979	7.58356
10/14/2019 14:43	11.1121	7.52104
10/14/2019 14:44	11.1614	7.48031
10/14/2019 14:44	11.1709	7.47258
10/14/2019 14:45	11.3447	7.3346
10/14/2019 14:45	11.5848	7.13419

TIME	O2	CO2
10/14/2019 14:46	11.3582	7.38962
10/14/2019 14:46	11.2581	7.41196
10/14/2019 14:47	11.5963	7.21257
10/14/2019 14:47	11.4482	7.34818
10/14/2019 14:48	11.2629	7.47518
10/14/2019 14:48	11.3447	7.37162
10/14/2019 14:49	11.6768	7.08336
10/14/2019 14:49	11.7937	7.05115
10/14/2019 14:50	11.5679	7.1585
10/14/2019 14:50	10.9849	7.68901
10/14/2019 14:51	11.0126	7.61963
10/14/2019 14:51	11.3102	7.38843
10/14/2019 14:52	11.4461	7.28835
10/14/2019 14:52	11.0749	7.6216
10/14/2019 14:53	11.1898	7.47889
10/14/2019 14:53	11.3095	7.37028
10/14/2019 14:54	11.3122	7.42395
10/14/2019 14:54	11.0999	7.56919
10/14/2019 14:55	11.3116	7.37565
10/14/2019 14:55	11.6057	7.14619
10/14/2019 14:56	11.4705	7.29734
10/14/2019 14:56	11.6112	7.14563
10/14/2019 14:57	11.6308	7.18652
10/14/2019 14:57	11.5307	7.21415
10/14/2019 14:58	11.6598	7.15487
10/14/2019 14:58	11.457	7.34518
10/14/2019 14:59	11.0559	7.60471
10/14/2019 14:59	11.1465	7.51899
10/14/2019 15:00	11.3812	7.36554
10/14/2019 15:00	11.1844	7.5437
10/14/2019 15:01	11.1635	7.47566
10/14/2019 15:01	11.2575	7.43351
10/14/2019 15:02	11.5347	7.18486
10/14/2019 15:02	11.7714	7.07246
10/14/2019 15:03	11.369	7.4129
10/14/2019 15:03	11.4556	7.29861
10/14/2019 15:04	11.762	7.01934
10/14/2019 15:04	11.8154	7.03165
10/14/2019 15:05	11.3711	7.3818
10/14/2019 15:05	11.434	7.32568
10/14/2019 15:06	11.4448	7.32908
10/14/2019 15:06	11.0316	7.59666
10/14/2019 15:07	10.9403	7.68412
10/14/2019 15:07	11.1871	7.45742
10/14/2019 15:08	11.2804	7.37802
10/14/2019 15:08	11.5537	7.148

TIME	O2	CO2
10/14/2019 15:09	11.8614	6.99116
10/14/2019 15:09	11.53	7.21699
10/14/2019 15:10	11.5598	7.13072
10/14/2019 15:10	11.6768	7.0903
End Run 2	**11.992**	**6.888**
10/14/2019 15:11	11.9337	6.86723
10/14/2019 15:11	11.7768	7.05999
10/14/2019 15:12	11.6287	7.10356
10/14/2019 15:12	11.7823	7.021
10/14/2019 15:13	11.7985	6.95935
10/14/2019 15:13	11.8607	6.92659
10/14/2019 15:14	11.7153	7.10798
10/14/2019 15:14	11.4245	7.3758
10/14/2019 15:15	11.0167	7.65089
10/14/2019 15:15	11.1459	7.49065
10/14/2019 16:25	11.2311	7.43351
10/14/2019 16:25	11.2318	7.44637
10/14/2019 16:26	11.369	7.32797
10/14/2019 16:26	11.4766	7.29932
10/14/2019 16:27	11.5165	7.17397
10/14/2019 16:27	11.5658	7.23293
10/14/2019 16:28	11.5503	7.22109
10/14/2019 16:28	11.578	7.18731
10/14/2019 16:29	11.5611	7.18802
10/14/2019 16:29	11.5171	7.26356
Run 3		
10/14/2019 16:30	11.3995	7.33831
10/14/2019 16:30	11.6477	7.06646
10/14/2019 16:31	11.6734	7.12124
10/14/2019 16:31	11.4089	7.36199
10/14/2019 16:32	11.1269	7.58837
10/14/2019 16:32	11.1919	7.44661
10/14/2019 16:33	11.4739	7.30319
10/14/2019 16:33	11.4265	7.31645
10/14/2019 16:34	11.3447	7.37802
10/14/2019 16:34	11.2074	7.5212
10/14/2019 16:35	11.1513	7.51946
10/14/2019 16:35	11.2527	7.41953
10/14/2019 16:36	11.3859	7.28914
10/14/2019 16:36	11.3623	7.35189
10/14/2019 16:37	11.3873	7.32568
10/14/2019 16:37	11.4089	7.35536
10/14/2019 16:38	11.1073	7.55877
10/14/2019 16:38	11.0904	7.56588
10/14/2019 16:39	11.369	7.3492

TIME	O2	CO2
10/14/2019 16:39	11.0471	7.62824
10/14/2019 16:40	10.7185	7.86535
10/14/2019 16:40	10.8091	7.79242
10/14/2019 16:41	10.97	7.69714
10/14/2019 16:41	11.1736	7.45403
10/14/2019 16:42	11.5199	7.22575
10/14/2019 16:42	11.4671	7.32213
10/14/2019 16:43	11.2236	7.53612
10/14/2019 16:43	11.0485	7.61276
10/14/2019 16:44	11.154	7.5328
10/14/2019 16:44	11.3677	7.33089
10/14/2019 16:45	11.5936	7.17476
10/14/2019 16:45	11.5861	7.19134
10/14/2019 16:46	11.578	7.24959
10/14/2019 16:46	11.229	7.54204
10/14/2019 16:47	10.8956	7.71206
10/14/2019 16:47	11.1026	7.56509
10/14/2019 16:48	11.2466	7.47187
10/14/2019 16:48	11.1547	7.56319
10/14/2019 16:49	11.1486	7.53083
10/14/2019 16:49	11.3636	7.36357
10/14/2019 16:50	11.6754	7.09377
10/14/2019 16:50	11.4698	7.29363
10/14/2019 16:51	11.0106	7.6501
10/14/2019 16:51	11.0951	7.57377
10/14/2019 16:52	11.2615	7.37849
10/14/2019 16:52	11.7525	7.00347
10/14/2019 16:53	12.0142	6.8554
10/14/2019 16:53	11.6294	7.2151
10/14/2019 16:54	11.2527	7.49981
10/14/2019 16:54	11.2453	7.45545
10/14/2019 16:55	11.4428	7.29292
10/14/2019 16:55	11.739	7.03047
10/14/2019 16:56	11.7139	7.14311
10/14/2019 16:56	11.2886	7.41385
10/14/2019 16:57	11.3751	7.33618
10/14/2019 16:57	11.4772	7.26861
10/14/2019 16:58	11.6213	7.10727
10/14/2019 16:58	11.8479	6.9363
10/14/2019 16:59	11.9709	6.90386
10/14/2019 16:59	11.6091	7.24264
10/14/2019 17:00	11.2974	7.40217
10/14/2019 17:00	11.4766	7.28132
10/14/2019 17:01	11.5942	7.14911
10/14/2019 17:01	11.9047	6.93338
10/14/2019 17:02	12.0338	6.82777

TIME	O2	CO2
10/14/2019 17:02	11.7701	7.10119
10/14/2019 17:03	11.2453	7.44582
10/14/2019 17:03	11.1438	7.483
10/14/2019 17:04	11.0167	7.60937
10/14/2019 17:04	11.2182	7.43761
10/14/2019 17:05	11.4712	7.26419
10/14/2019 17:05	11.4279	7.25227
10/14/2019 17:06	11.4678	7.29806
10/14/2019 17:06	11.4441	7.27469
10/14/2019 17:07	11.5564	7.17839
10/14/2019 17:07	11.4867	7.26838
10/14/2019 17:08	11.4759	7.2784
10/14/2019 17:08	11.5354	7.20112
10/14/2019 17:09	11.5638	7.12953
10/14/2019 17:09	11.5631	7.19047
10/14/2019 17:10	11.6254	7.12779
10/14/2019 17:10	11.695	7.1274
10/14/2019 17:11	11.5949	7.16695
10/14/2019 17:11	11.5665	7.22622
10/14/2019 17:12	11.4434	7.29877
10/14/2019 17:12	11.6037	7.11493
10/14/2019 17:13	11.6328	7.14042
10/14/2019 17:13	11.6828	7.14295
10/14/2019 17:14	11.7505	7.04997
10/14/2019 17:14	11.7694	6.97206
10/14/2019 17:15	11.695	7.09693
10/14/2019 17:15	11.6416	7.09938
10/14/2019 17:16	11.6098	7.1705
10/14/2019 17:16	11.9128	6.84979
10/14/2019 17:17	12.1928	6.7407
10/14/2019 17:17	11.9912	6.86771
10/14/2019 17:18	11.8695	6.94712
10/14/2019 17:18	11.6923	7.08146
10/14/2019 17:19	11.7566	6.98129
10/14/2019 17:19	11.7606	7.05115
10/14/2019 17:20	11.7944	6.97151
10/14/2019 17:20	11.8587	6.93583
10/14/2019 17:21	11.8357	6.95604
10/14/2019 17:21	11.9074	6.90394
10/14/2019 17:22	11.8377	6.96038
10/14/2019 17:22	11.8898	6.97537
10/14/2019 17:23	11.8688	6.93449
10/14/2019 17:23	11.9067	6.92304
10/14/2019 17:24	11.8323	6.95588
10/14/2019 17:24	11.8796	6.91254
10/14/2019 17:25	11.8769	6.96614

TIME	O2	CO2
10/14/2019 17:25	11.7823	6.98177
10/14/2019 17:26	11.7336	7.07049
10/14/2019 17:26	11.9013	6.89155
10/14/2019 17:27	11.9662	6.88452
10/14/2019 17:27	11.7261	7.08596
10/14/2019 17:28	11.8783	6.9663
10/14/2019 17:28	11.8688	6.96559
10/14/2019 17:29	11.8377	6.95106
10/14/2019 17:29	11.7112	7.09946
10/14/2019 17:30	11.8938	6.91404
10/14/2019 17:30	11.8884	6.98129
10/14/2019 17:31	11.812	6.91775
10/14/2019 17:31	11.86	6.96219
10/14/2019 17:32	11.9283	6.85074
10/14/2019 17:32	12.0075	6.78025
10/14/2019 17:33	11.8803	6.91973
10/14/2019 17:33	11.9331	6.88128
10/14/2019 17:34	12.0474	6.78641
10/14/2019 17:34	11.9845	6.78941
10/14/2019 17:35	11.9175	6.91704
10/14/2019 17:35	11.9344	6.90781
10/14/2019 17:36	11.9696	6.80093
10/14/2019 17:36	11.8688	6.90773
10/14/2019 17:37	11.9317	6.93283
10/14/2019 17:37	11.95	6.87339
10/14/2019 17:38	11.9865	6.83882
10/14/2019 17:38	11.8938	6.90875
10/14/2019 17:39	11.9087	6.92959
10/14/2019 17:39	11.9777	6.88018
10/14/2019 17:40	11.8648	6.88192
10/14/2019 17:40	11.8127	6.9633
10/14/2019 17:41	11.9209	6.89857
10/14/2019 17:41	12.0927	6.72405
10/14/2019 17:42	11.9581	6.9071
10/14/2019 17:42	11.762	7.07704
10/14/2019 17:43	11.7045	7.09717
10/14/2019 17:43	11.7505	6.96827
10/14/2019 17:44	11.697	7.0521
10/14/2019 17:44	11.7647	7.00261
10/14/2019 17:45	11.8681	6.92509
10/14/2019 17:45	11.833	6.93346
10/14/2019 17:46	11.8803	6.93638
10/14/2019 17:46	11.9777	6.80251
10/14/2019 17:47	12.0534	6.75515
10/14/2019 17:47	12.0717	6.72231
10/14/2019 17:48	12.0825	6.76478

TIME	O2	CO2
10/14/2019 17:48	12.0291	6.84316
10/14/2019 17:49	11.9567	6.78767
10/14/2019 17:49	11.9378	6.80646
10/14/2019 17:50	12.0906	6.76494
10/14/2019 17:50	12.0433	6.77875
10/14/2019 17:51	12.0237	6.81727
10/14/2019 17:51	12.1407	6.68143
10/14/2019 17:52	12.2712	6.6268
10/14/2019 17:52	12.1583	6.65317
10/14/2019 17:53	12.0994	6.7722
10/14/2019 17:53	12.1556	6.68008
10/14/2019 17:54	12.163	6.70779
10/14/2019 17:54	12.021	6.80172
10/14/2019 17:55	12.0528	6.81774
10/14/2019 17:55	12.1285	6.7321
10/14/2019 17:56	12.2103	6.67274
10/14/2019 17:56	12.0649	6.78064
10/14/2019 17:57	12.1799	6.68135
10/14/2019 17:57	12.1495	6.72981
10/14/2019 17:58	12.1955	6.65348
10/14/2019 17:58	12.023	6.84403
10/14/2019 17:59	12.0927	6.74497
10/14/2019 17:59	12.2868	6.59957
10/14/2019 18:00	12.3808	6.50122
10/14/2019 18:00	12.4964	6.44012
10/14/2019 18:01	12.5519	6.37737
10/14/2019 18:01	12.6837	6.2675
10/14/2019 18:02	12.8224	6.1959
10/14/2019 18:02	12.6249	6.37145
10/14/2019 18:03	12.6384	6.31912
10/14/2019 18:03	12.7128	6.26687
10/14/2019 18:04	12.5701	6.43973
10/14/2019 18:04	12.5208	6.42686
10/14/2019 18:05	12.5018	6.38708
10/14/2019 18:05	12.4308	6.4627
10/14/2019 18:06	12.2976	6.59941
10/14/2019 18:06	12.1292	6.69563
10/14/2019 18:07	12.1434	6.68766
10/14/2019 18:07	12.0304	6.78357
10/14/2019 18:08	12.1217	6.68229
10/14/2019 18:08	12.1366	6.71766
10/14/2019 18:09	12.0602	6.74118
10/14/2019 18:09	12.0825	6.73328
10/14/2019 18:10	12.0866	6.68308
10/14/2019 18:10	12.2022	6.62151
10/14/2019 18:11	12.3348	6.52151

TIME	O2	CO2
10/14/2019 18:11	12.7696	6.20806
10/14/2019 18:12	12.6107	6.35338
10/14/2019 18:12	12.395	6.47935
10/14/2019 18:13	12.5972	6.29789
10/14/2019 18:13	12.5167	6.35551
10/14/2019 18:14	12.6763	6.27223
10/14/2019 18:14	12.608	6.33199
10/14/2019 18:15	12.4896	6.43815
10/14/2019 18:15	12.3206	6.6066
10/14/2019 18:16	12.3612	6.54787
10/14/2019 18:16	12.2022	6.66714
10/14/2019 18:17	12.2428	6.61962
10/14/2019 18:17	12.3104	6.58781
10/14/2019 18:18	12.1644	6.62065
10/14/2019 18:18	12.3557	6.46759
10/14/2019 18:19	12.282	6.57305
10/14/2019 18:19	12.2496	6.57147
10/14/2019 18:20	12.4951	6.45504
10/14/2019 18:20	12.3206	6.5867
10/14/2019 18:21	12.3077	6.6208
10/14/2019 18:21	12.3801	6.53982
10/14/2019 18:22	12.2665	6.62696
10/14/2019 18:22	12.3618	6.56302
10/14/2019 18:23	12.3801	6.541
10/14/2019 18:23	12.2685	6.62767
10/14/2019 18:24	12.3422	6.56247
10/14/2019 18:24	12.3327	6.53098
10/14/2019 18:25	12.4464	6.40547
10/14/2019 18:25	12.5363	6.37619
10/14/2019 18:26	12.4315	6.46641
10/14/2019 18:26	12.4281	6.52008
10/14/2019 18:27	12.5708	6.40397
10/14/2019 18:27	12.3104	6.56918
10/14/2019 18:28	12.349	6.53666
10/14/2019 18:28	12.3828	6.51906
10/14/2019 18:29	12.2928	6.58994
10/14/2019 18:29	12.3524	6.56855
10/14/2019 18:30	12.351	6.55553
10/14/2019 18:30	12.4511	6.44746
10/14/2019 18:31	12.7013	6.23427
10/14/2019 18:31	12.6121	6.36206
10/14/2019 18:32	12.5877	6.38361
10/14/2019 18:32	12.4585	6.47951
10/14/2019 18:33	12.2732	6.65072
10/14/2019 18:33	12.1813	6.65569
10/14/2019 18:34	12.5072	6.46167

TIME	O2	CO2
10/14/2019 18:34	12.328	6.55789
10/14/2019 18:35	12.4085	6.50785
10/14/2019 18:35	12.5573	6.43231
10/14/2019 18:36	12.4301	6.51337
10/14/2019 18:36	12.4376	6.48543
10/14/2019 18:37	12.4403	6.45686
10/14/2019 18:37	12.3415	6.58118
10/14/2019 18:38	12.117	6.71323
10/14/2019 18:38	11.9885	6.81901
10/14/2019 18:39	12.069	6.73147
10/14/2019 18:39	12.3902	6.51858
10/14/2019 18:40	12.1481	6.66785
10/14/2019 18:40	12.0602	6.74639
10/14/2019 18:41	12.1914	6.66106
10/14/2019 18:41	12.1502	6.61567
10/14/2019 18:42	12.2097	6.63509
10/14/2019 18:42	12.2178	6.60123
10/14/2019 18:43	12.209	6.63004
10/14/2019 18:43	12.186	6.64756
10/14/2019 18:44	12.2347	6.65285
10/14/2019 18:44	12.1616	6.68419
10/14/2019 18:45	12.3179	6.56152
10/14/2019 18:45	12.3213	6.53769
10/14/2019 18:46	12.3943	6.46657
10/14/2019 18:46	12.3213	6.57857
10/14/2019 18:47	11.9135	6.85492
10/14/2019 18:47	12.1136	6.59018
10/14/2019 18:48	12.1941	6.58292
10/14/2019 18:48	12.3605	6.49254
10/14/2019 18:49	12.5945	6.3694
10/14/2019 18:49	12.3916	6.52782
10/14/2019 18:50	12.3862	6.4994
10/14/2019 18:50	12.2604	6.58852
10/14/2019 18:51	12.0873	6.76407
10/14/2019 18:51	11.998	6.81759
10/14/2019 18:52	12.0447	6.83314
10/14/2019 18:52	12.0169	6.75894
10/14/2019 18:53	12.1217	6.61607
10/14/2019 18:53	12.1873	6.62988
10/14/2019 18:54	12.1569	6.61788
10/14/2019 18:54	12.4227	6.4342
10/14/2019 18:55	12.4531	6.45473
10/14/2019 18:55	12.3875	6.55624
10/14/2019 18:56	12.096	6.72571
10/14/2019 18:56	12.0359	6.79572
10/14/2019 18:57	12.2212	6.58213

TIME	O2	CO2
10/14/2019 18:57	12.3084	6.54487
10/14/2019 18:58	12.1062	6.68
10/14/2019 18:58	12.0812	6.74078
10/14/2019 18:59	12.1021	6.68214
10/14/2019 18:59	12.161	6.61236
10/14/2019 19:00	12.1488	6.69421
10/14/2019 19:00	12.2117	6.61678
10/14/2019 19:01	12.4207	6.50327
10/14/2019 19:01	12.374	6.48962
10/14/2019 19:02	12.2327	6.6568
10/14/2019 19:02	12.0676	6.79564
10/14/2019 19:03	12.0528	6.77165
10/14/2019 19:03	12.0528	6.76162
10/14/2019 19:04	12.161	6.6909
10/14/2019 19:04	12.2178	6.63209
10/14/2019 19:05	12.2272	6.59262
10/14/2019 19:05	12.2218	6.5961
10/14/2019 19:06	12.259	6.59239
10/14/2019 19:06	12.2827	6.58655
10/14/2019 19:07	12.1806	6.62649
10/14/2019 19:07	12.2266	6.60675
10/14/2019 19:08	12.1982	6.59768
10/14/2019 19:08	12.3219	6.52427
10/14/2019 19:09	12.2915	6.57171
10/14/2019 19:09	12.3652	6.49222
10/14/2019 19:10	12.3023	6.53516
10/14/2019 19:10	12.4193	6.43113
10/14/2019 19:11	12.3882	6.47115
10/14/2019 19:11	12.4038	6.46546
10/14/2019 19:12	12.4396	6.46901
10/14/2019 19:12	12.3206	6.54305
10/14/2019 19:13	12.2868	6.58426
10/14/2019 19:13	12.0913	6.73068
10/14/2019 19:14	12.0791	6.74615
10/14/2019 19:14	12.0284	6.81332
10/14/2019 19:15	12.0988	6.70834
10/14/2019 19:15	12.0771	6.73865
10/14/2019 19:16	12.1988	6.6418
10/14/2019 19:16	12.0933	6.77709
10/14/2019 19:17	12.1447	6.70708
10/14/2019 19:17	12.3165	6.58268
10/14/2019 19:18	12.1853	6.66501
10/14/2019 19:18	12.1955	6.66059
10/14/2019 19:19	12.2083	6.6639
10/14/2019 19:19	12.1644	6.68277
10/14/2019 19:20	12.1522	6.71292

TIME	O2	CO2
10/14/2019 19:20	11.9283	6.84182
10/14/2019 19:21	11.8086	6.97277
10/14/2019 19:21	11.7829	6.9352
10/14/2019 19:22	11.8911	6.88555
10/14/2019 19:22	12.0487	6.72539
10/14/2019 19:23	12.1616	6.64567
10/14/2019 19:23	12.1143	6.65956
10/14/2019 19:24	12.2117	6.66801
10/14/2019 19:24	12.1589	6.67101
10/14/2019 19:25	12.1982	6.6253
10/14/2019 19:25	12.2049	6.63091
10/14/2019 19:26	12.2584	6.59239
10/14/2019 19:26	12.307	6.6167
10/14/2019 19:27	12.2502	6.57897
10/14/2019 19:27	12.2063	6.62562
10/14/2019 19:28	12.2861	6.55205
10/14/2019 19:28	12.3706	6.50335
10/14/2019 19:29	12.1982	6.63683
10/14/2019 19:29	12.2746	6.5991
10/14/2019 19:30	12.211	6.63572
10/14/2019 19:30	12.138	6.70574
10/14/2019 19:31	11.9905	6.85847
10/14/2019 19:31	12.0244	6.79146
10/14/2019 19:32	12.1441	6.69334
10/14/2019 19:32	12.186	6.61117
10/14/2019 19:33	12.0352	6.79114
10/14/2019 19:33	12.0886	6.70329
10/14/2019 19:34	12.1143	6.70858
10/14/2019 19:34	12.0149	6.76154
10/14/2019 19:35	12.094	6.71474
10/14/2019 19:35	12.188	6.63777
10/14/2019 19:36	12.2124	6.63272
10/14/2019 19:36	12.0724	6.73194
10/14/2019 19:37	12.0805	6.68971
10/14/2019 19:37	12.0663	6.74102
10/14/2019 19:38	12.0663	6.65238
10/14/2019 19:38	12.1211	6.69713
10/14/2019 19:39	12.1786	6.61275
10/14/2019 19:39	12.2692	6.56184
10/14/2019 19:40	12.1833	6.68735
10/14/2019 19:40	12.2049	6.67874
10/14/2019 19:41	12.1387	6.69555
10/14/2019 19:41	12.2651	6.53816
10/14/2019 19:42	12.2097	6.63178
10/14/2019 19:42	12.1224	6.68387
10/14/2019 19:43	12.1988	6.63517

TIME	O2	CO2
10/14/2019 19:43	12.23	6.57179
10/14/2019 19:44	12.1995	6.65885
10/14/2019 19:44	12.2313	6.57273
10/14/2019 19:45	12.2286	6.60683
10/14/2019 19:45	12.2049	6.62333
10/14/2019 19:46	12.3375	6.55379
10/14/2019 19:46	12.2408	6.65996
10/14/2019 19:47	12.2306	6.61536
10/14/2019 19:47	12.372	6.51614
10/14/2019 19:48	12.3016	6.60604
10/14/2019 19:48	12.1853	6.66445
10/14/2019 19:49	12.0866	6.65853
10/14/2019 19:49	12.1542	6.67977
10/14/2019 19:50	12.0575	6.70684
10/14/2019 19:50	12.1786	6.61299
10/14/2019 19:51	12.1089	6.66445
10/14/2019 19:51	12.1556	6.65261
10/14/2019 19:52	12.3557	6.52064
10/14/2019 19:52	12.3808	6.44968
10/14/2019 19:53	12.441	6.46917
10/14/2019 19:53	12.372	6.47707
10/14/2019 19:54	12.3591	6.50785
10/14/2019 19:54	12.2969	6.52079
10/14/2019 19:55	12.3213	6.56887
10/14/2019 19:55	12.301	6.54834
10/14/2019 19:56	12.3605	6.4923
10/14/2019 19:56	12.3267	6.52435
10/14/2019 19:57	12.4038	6.50959
10/14/2019 19:57	12.4328	6.5028
10/14/2019 19:58	12.2543	6.55939
10/14/2019 19:58	12.3672	6.50832
10/14/2019 19:59	12.3199	6.5459
10/14/2019 19:59	12.1562	6.68561
10/14/2019 20:00	11.9202	6.83661
10/14/2019 20:00	11.9168	6.93827
10/14/2019 20:01	11.9682	6.8074
10/14/2019 20:01	11.95	6.82461
10/14/2019 20:02	11.808	6.99053
10/14/2019 20:02	11.8702	6.94972
10/14/2019 20:03	11.8992	6.88018
10/14/2019 20:03	11.9926	6.80101
10/14/2019 20:04	11.7971	6.96251
10/14/2019 20:04	11.8458	6.92265
10/14/2019 20:05	11.8059	6.95556
10/14/2019 20:05	11.8269	6.85831
10/14/2019 20:06	11.7701	6.96882

TIME	O2	CO2
10/14/2019 20:06	11.8458	6.83692
10/14/2019 20:07	11.9851	6.75507
10/14/2019 20:07	11.8607	6.92359
10/14/2019 20:08	11.7958	6.99582
10/14/2019 20:08	11.9486	6.86297
10/14/2019 20:09	11.9094	6.84569
10/14/2019 20:09	11.739	7.01397
10/14/2019 20:10	11.86	6.87773
10/14/2019 20:10	11.927	6.88152
10/14/2019 20:11	11.8492	6.8775
10/14/2019 20:11	11.885	6.9453
10/14/2019 20:12	11.8309	6.91017
10/14/2019 20:12	11.8553	6.8902
10/14/2019 20:13	11.902	6.86645
10/14/2019 20:13	11.9811	6.82366
10/14/2019 20:14	11.9141	6.84695
10/14/2019 20:14	12.0203	6.75775
10/14/2019 20:15	11.9696	6.83724
10/14/2019 20:15	11.9899	6.82832
10/14/2019 20:16	11.9114	6.92683
10/14/2019 20:16	11.7687	6.94743
10/14/2019 20:17	11.8587	6.96503
10/14/2019 20:17	11.8783	6.88105
10/14/2019 20:18	11.9845	6.7673
10/14/2019 20:18	11.8587	6.92328
10/14/2019 20:19	11.8857	6.86739
10/14/2019 20:19	11.81	6.95667
10/14/2019 20:20	11.8167	6.92509
10/14/2019 20:20	11.8269	6.91183
10/14/2019 20:21	11.8492	6.86542
10/14/2019 20:21	11.9506	6.87221
10/14/2019 20:22	11.8445	6.86802
10/14/2019 20:22	11.8546	6.837
10/14/2019 20:23	11.9452	6.81459
10/14/2019 20:23	12.1204	6.6785
10/14/2019 20:24	12.0034	6.7456
10/14/2019 20:24	12.0703	6.73431
10/14/2019 20:25	12.0643	6.71158
10/14/2019 20:25	12.0311	6.7126
10/14/2019 20:26	11.996	6.77141
10/14/2019 20:26	12.2083	6.59231
10/14/2019 20:27	12.1393	6.64756
10/14/2019 20:27	12.1048	6.66635
10/14/2019 20:28	12.0467	6.77291
10/14/2019 20:28	12.0406	6.71016
10/14/2019 20:29	12.1556	6.60589

TIME	O2	CO2
10/14/2019 20:29	11.9567	6.78412
10/14/2019 20:30	12.0048	6.77678
10/14/2019 20:30	11.9669	6.82035
10/14/2019 20:31	12.0048	6.73834
10/14/2019 20:31	12.1508	6.65861
10/14/2019 20:32	12.1319	6.66232
10/14/2019 20:32	12.0386	6.79943
10/14/2019 20:33	11.8823	6.80085
10/14/2019 20:33	11.9047	6.86139
10/14/2019 20:34	12.0156	6.71687
10/14/2019 20:34	12.1319	6.6268
10/14/2019 20:35	11.8681	6.83061
10/14/2019 20:35	12.0629	6.72176
10/14/2019 20:36	12.1887	6.61473
10/14/2019 20:36	12.023	6.73257
10/14/2019 20:37	11.931	6.79738
10/14/2019 20:37	12.0974	6.61883
10/14/2019 20:38	12.1786	6.61954
10/14/2019 20:38	12.0825	6.62838
10/14/2019 20:39	12.1096	6.68174
10/14/2019 20:39	12.1481	6.62514
10/14/2019 20:40	12.2516	6.57889
10/14/2019 20:40	12.0981	6.66872
10/14/2019 20:41	12.1583	6.62846
10/14/2019 20:41	12.1339	6.66769
10/14/2019 20:42	12.1326	6.6313
10/14/2019 20:42	11.9628	6.76667
10/14/2019 20:43	12.0703	6.71087
10/14/2019 20:43	12.1914	6.63888
10/14/2019 20:44	12.1123	6.62104
10/14/2019 20:44	12.0974	6.66469
10/14/2019 20:45	12.0812	6.63651
10/14/2019 20:45	12.0731	6.65988
10/14/2019 20:46	12.0541	6.71063
10/14/2019 20:46	12.1434	6.66272
10/14/2019 20:47	12.1955	6.61962
10/14/2019 20:47	12.09	6.67503
10/14/2019 20:48	12.0284	6.73731
10/14/2019 20:48	12.0676	6.71134
10/14/2019 20:49	12.1745	6.64038
10/14/2019 20:49	12.0791	6.66216
10/14/2019 20:50	12.0156	6.78641
10/14/2019 20:50	12.0568	6.68427
10/14/2019 20:51	12.1454	6.63154
10/14/2019 20:51	12.0088	6.76628
10/14/2019 20:52	12.0217	6.74497

TIME	O2	CO2
10/14/2019 20:52	11.9797	6.76707
10/14/2019 20:53	12.1326	6.61812
10/14/2019 20:53	11.9973	6.7673
10/14/2019 20:54	11.908	6.82769
10/14/2019 20:54	12.0453	6.70218
10/14/2019 20:55	12.1123	6.61078
10/14/2019 20:55	12.1779	6.58007
10/14/2019 20:56	12.7176	6.1757
10/14/2019 20:56	13.1801	5.83786
10/14/2019 20:57	13.2207	5.87543
10/14/2019 20:57	12.7209	6.33356
10/14/2019 20:58	12.3497	6.52214
10/14/2019 20:58	12.2245	6.58576
10/14/2019 20:59	12.1833	6.61844
10/14/2019 20:59	12.2232	6.59941
10/14/2019 21:00	12.2469	6.57463
10/14/2019 21:00	12.2009	6.55608
10/14/2019 21:01	12.232	6.56839
10/14/2019 21:01	12.3605	6.4211
10/14/2019 21:02	12.3977	6.46972
10/14/2019 21:02	12.2807	6.5054
10/14/2019 21:03	12.3977	6.44123
10/14/2019 21:03	12.305	6.55616
10/14/2019 21:04	12.2103	6.57123
10/14/2019 21:04	12.1535	6.64638
10/14/2019 21:05	12.2043	6.57621
10/14/2019 21:05	12.1813	6.6553
10/14/2019 21:06	12.14	6.61275
10/14/2019 21:06	12.1576	6.63193
10/14/2019 21:07	12.2658	6.55197
10/14/2019 21:07	12.2394	6.59815
End Run 3	**12.023**	**6.789**
10/14/2019 21:08	12.1792	6.63762
10/14/2019 21:08	12.2252	6.58876
10/14/2019 21:09	12.2239	6.6051
10/14/2019 21:09	12.2841	6.51535
10/14/2019 21:10	12.2374	6.57905
10/14/2019 21:10	12.234	6.57044
10/14/2019 22:14	9.93396	10.656
10/14/2019 22:14	9.91976	10.6828
10/14/2019 22:15	9.91503	10.6978
10/14/2019 22:15	9.90894	10.6884
10/14/2019 22:16	15.1339	9.23892
10/14/2019 22:16	9.90962	10.6489
10/14/2019 22:17	9.90353	10.6607

Analyzer Data - 10/13/2019

TIME	O2	CO2
10/14/2019 22:17	9.9015	10.7365
10/14/2019 22:18	9.8988	10.7286
10/14/2019 22:18	19.9038	0.148474
10/14/2019 22:19	0.11644	3.95E-04
10/14/2019 22:19	0.046184	-0.02613
10/14/2019 22:20	0.029347	-0.02668
10/14/2019 22:20	0.032592	-0.03347
10/14/2019 22:21	0.029347	-0.03789
10/14/2019 22:21	0.026777	-0.03765
10/14/2019 22:22	0.027994	-0.03939
10/14/2019 22:22	0.022111	-0.04215

ncr o2.csv "MDY4c./:"
10/17/2019 12:21
; 10/15/2019 10:50:50 ""
1

TIME	O2	CO2
10/15/2019 11:40	9.8102	10.4586
10/15/2019 11:40	9.81561	10.4223
10/15/2019 11:41	9.83184	10.5336
10/15/2019 11:41	9.83996	10.5099
10/15/2019 11:42	9.8474	10.5463
10/15/2019 11:42	9.85349	10.4973
10/15/2019 11:43	9.85687	10.4681
10/15/2019 11:43	9.27797	0.755554
10/15/2019 11:44	0.061939	-0.03276
10/15/2019 11:44	0.048212	-0.03292
10/15/2019 11:45	0.04517	-0.04886
10/15/2019 11:45	0.038272	-0.05336
10/15/2019 11:46	0.035703	-0.06054
10/15/2019 11:46	12.3402	6.17057
Run 4		
10/15/2019 11:47	12.3517	6.18801
10/15/2019 11:47	12.489	6.07442
10/15/2019 11:48	12.3077	6.19732
10/15/2019 11:48	12.3023	6.24295
10/15/2019 11:49	12.2983	6.16583
10/15/2019 11:49	12.3321	6.11744
10/15/2019 11:50	12.5931	5.95965
10/15/2019 11:50	12.3774	6.09321
10/15/2019 11:51	12.3754	6.13015
10/15/2019 11:51	12.4754	6.07474
10/15/2019 11:52	12.2678	6.23813
10/15/2019 11:52	12.1941	6.35259
10/15/2019 11:53	12.2536	6.25763
10/15/2019 11:53	12.2327	6.25345
10/15/2019 11:54	12.3321	6.15194
10/15/2019 11:54	12.3436	6.21674
10/15/2019 11:55	12.328	6.18312
10/15/2019 11:55	12.2516	6.24595
10/15/2019 11:56	12.2347	6.27657
10/15/2019 11:56	12.1596	6.32228
10/15/2019 11:57	12.1616	6.25873
10/15/2019 11:57	12.1846	6.31699
10/15/2019 11:58	12.2218	6.23703
10/15/2019 11:58	12.2766	6.17183
10/15/2019 11:59	12.1982	6.18027
10/15/2019 11:59	12.2049	6.22369
10/15/2019 12:00	12.2976	6.1693

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 12:00	12.3564	6.15912
10/15/2019 12:01	12.2245	6.263
10/15/2019 12:01	12.3023	6.22929
10/15/2019 12:02	12.2171	6.29252
10/15/2019 12:02	12.2313	6.23782
10/15/2019 12:03	12.2218	6.2686
10/15/2019 12:03	12.2638	6.20577
10/15/2019 12:04	12.2144	6.24942
10/15/2019 12:04	12.1914	6.20024
10/15/2019 12:05	12.2347	6.22692
10/15/2019 12:05	12.259	6.21627
10/15/2019 12:06	12.2529	6.23063
10/15/2019 12:06	12.2435	6.23024
10/15/2019 12:07	12.3267	6.22661
10/15/2019 12:07	12.3138	6.20743
10/15/2019 12:08	12.2989	6.23466
10/15/2019 12:08	12.2651	6.23671
10/15/2019 12:09	12.305	6.15628
10/15/2019 12:09	12.234	6.22171
10/15/2019 12:10	12.2638	6.17475
10/15/2019 12:10	12.2293	6.26623
10/15/2019 12:11	12.2712	6.22692
10/15/2019 12:11	12.3226	6.22377
10/15/2019 12:12	12.1846	6.22621
10/15/2019 12:12	12.3185	6.1768
10/15/2019 12:13	12.2293	6.25416
10/15/2019 12:13	12.2759	6.25266
10/15/2019 12:14	12.2158	6.25834
10/15/2019 12:14	12.184	6.28683
10/15/2019 12:15	12.234	6.20245
10/15/2019 12:15	12.1772	6.21327
10/15/2019 12:16	12.2847	6.2304
10/15/2019 12:16	12.2996	6.22511
10/15/2019 12:17	12.3497	6.21658
10/15/2019 12:17	12.2651	6.23419
10/15/2019 12:18	12.3213	6.23529
10/15/2019 12:18	12.2597	6.24895
10/15/2019 12:19	12.2367	6.26386
10/15/2019 12:19	12.0419	6.42158
10/15/2019 12:20	12.184	6.30538
10/15/2019 12:20	12.2103	6.28715
10/15/2019 12:21	12.2239	6.23371
10/15/2019 12:21	12.1961	6.31075
10/15/2019 12:22	12.2529	6.24737
10/15/2019 12:22	12.2949	6.28605
10/15/2019 12:23	12.161	6.30973

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 12:23	12.2144	6.37619
10/15/2019 12:24	12.2212	6.31549
10/15/2019 12:24	12.188	6.31912
10/15/2019 12:25	12.0561	6.42386
10/15/2019 12:25	12.1792	6.34012
10/15/2019 12:26	12.3213	6.20024
10/15/2019 12:26	12.4511	6.06606
10/15/2019 12:27	12.4612	6.10071
10/15/2019 12:27	12.4809	6.08547
10/15/2019 12:28	12.4579	6.14349
10/15/2019 12:28	12.3875	6.15936
10/15/2019 12:29	12.3321	6.21777
10/15/2019 12:29	12.5032	6.06195
10/15/2019 12:30	12.5904	6.00615
10/15/2019 12:30	12.4139	6.10237
10/15/2019 12:31	12.4389	6.12194
10/15/2019 12:31	12.5052	6.0584
10/15/2019 12:32	12.5086	6.07158
10/15/2019 12:32	12.3652	6.20332
10/15/2019 12:33	12.5776	5.99423
10/15/2019 12:33	12.4619	6.12384
10/15/2019 12:34	12.4146	6.11413
10/15/2019 12:34	12.3415	6.2349
10/15/2019 12:35	12.3591	6.18564
10/15/2019 12:35	12.3341	6.21848
10/15/2019 12:36	12.3037	6.20601
10/15/2019 12:36	12.2895	6.27302
10/15/2019 12:37	12.234	6.24468
10/15/2019 12:37	12.3456	6.20451
10/15/2019 12:38	12.2949	6.2184
10/15/2019 12:38	12.3517	6.21051
10/15/2019 12:39	12.3077	6.25321
10/15/2019 12:39	12.3064	6.25131
10/15/2019 12:40	12.2638	6.29102
10/15/2019 12:40	12.2881	6.25992
10/15/2019 12:41	12.351	6.23687
10/15/2019 12:41	12.3747	6.16764
10/15/2019 12:42	12.2989	6.28841
10/15/2019 12:42	12.2557	6.23837
10/15/2019 12:43	12.3334	6.22014
10/15/2019 12:43	12.3185	6.21903
10/15/2019 12:44	12.3037	6.26978
10/15/2019 12:44	12.3246	6.23687
10/15/2019 12:45	12.3564	6.20522
10/15/2019 12:45	12.2719	6.28123
10/15/2019 12:46	12.2536	6.25747

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 12:46	12.2976	6.25526
10/15/2019 12:47	12.3524	6.15967
10/15/2019 12:47	12.3091	6.23079
10/15/2019 12:48	12.376	6.20372
10/15/2019 12:48	12.3699	6.22874
10/15/2019 12:49	12.2692	6.27515
10/15/2019 12:49	12.2685	6.31951
10/15/2019 12:50	12.2712	6.29725
10/15/2019 12:50	12.2523	6.28518
10/15/2019 12:51	12.2509	6.31375
10/15/2019 12:51	12.2908	6.26892
10/15/2019 12:52	12.2293	6.3162
10/15/2019 12:52	12.2759	6.25337
10/15/2019 12:53	12.257	6.28683
10/15/2019 12:53	12.3003	6.23932
10/15/2019 12:54	12.3977	6.20664
10/15/2019 12:54	12.3206	6.23079
10/15/2019 12:55	12.3612	6.24666
10/15/2019 12:55	12.3023	6.27815
10/15/2019 12:56	12.2496	6.30909
10/15/2019 12:56	12.633	5.96202
10/15/2019 12:57	12.938	5.79429
10/15/2019 12:57	12.7006	5.98641
10/15/2019 12:58	12.4491	6.17199
10/15/2019 12:58	12.3016	6.27523
10/15/2019 12:59	12.3098	6.2832
10/15/2019 12:59	12.3787	6.25471
10/15/2019 13:00	12.2989	6.24121
10/15/2019 13:00	12.1806	6.30965
10/15/2019 13:01	12.2245	6.26615
10/15/2019 13:01	12.2435	6.31225
10/15/2019 13:02	12.2293	6.28257
10/15/2019 13:02	12.2901	6.27373
10/15/2019 13:03	12.2442	6.30625
10/15/2019 13:03	12.2144	6.28518
10/15/2019 13:04	12.2381	6.27255
10/15/2019 13:04	12.2712	6.28131
10/15/2019 13:05	12.2915	6.26757
10/15/2019 13:05	12.2753	6.24192
10/15/2019 13:06	12.2482	6.3113
10/15/2019 13:06	12.2239	6.30823
10/15/2019 13:07	12.2232	6.32764
10/15/2019 13:07	12.2124	6.28155
10/15/2019 13:08	12.3145	6.27113
10/15/2019 13:08	12.2631	6.28676
10/15/2019 13:09	12.2935	6.26663

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 13:09	12.1542	6.38929
10/15/2019 13:10	12.2732	6.28478
10/15/2019 13:10	12.2928	6.26221
10/15/2019 13:11	12.234	6.30128
10/15/2019 13:11	12.2198	6.34327
10/15/2019 13:12	12.3348	6.23616
10/15/2019 13:12	12.2482	6.30657
10/15/2019 13:13	12.2171	6.3192
10/15/2019 13:13	12.2286	6.31336
10/15/2019 13:14	12.2428	6.30704
10/15/2019 13:14	12.3361	6.22274
10/15/2019 13:15	12.1907	6.33238
10/15/2019 13:15	12.2983	6.27657
10/15/2019 13:16	12.2624	6.30531
10/15/2019 13:16	12.2942	6.25645
10/15/2019 13:17	12.2469	6.34596
10/15/2019 13:17	12.2928	6.29465
10/15/2019 13:18	12.2557	6.31778
10/15/2019 13:18	12.2097	6.27034
10/15/2019 13:19	12.2259	6.33696
10/15/2019 13:19	12.374	6.18469
10/15/2019 13:20	12.397	6.20569
10/15/2019 13:20	12.2901	6.30286
10/15/2019 13:21	12.3517	6.2626
10/15/2019 13:21	12.3368	6.27168
10/15/2019 13:22	12.2901	6.30594
10/15/2019 13:22	12.213	6.36159
10/15/2019 13:23	12.2009	6.32409
10/15/2019 13:23	12.2293	6.35638
10/15/2019 13:24	12.2529	6.28968
10/15/2019 13:24	12.2367	6.36087
10/15/2019 13:25	12.2401	6.32346
10/15/2019 13:25	12.3084	6.2881
10/15/2019 13:26	12.2408	6.31423
10/15/2019 13:26	12.255	6.35488
10/15/2019 13:27	12.2293	6.38266
10/15/2019 13:27	12.282	6.30057
10/15/2019 13:28	12.2171	6.31052
10/15/2019 13:28	12.255	6.33088
10/15/2019 13:29	12.2597	6.29568
10/15/2019 13:29	12.2624	6.29205
10/15/2019 13:30	12.257	6.31462
10/15/2019 13:30	12.1961	6.3443
10/15/2019 13:31	12.2151	6.36024
10/15/2019 13:31	12.1136	6.399
10/15/2019 13:32	12.1576	6.40808

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 13:32	12.1278	6.40737
10/15/2019 13:33	12.2739	6.2956
10/15/2019 13:33	12.2266	6.30357
10/15/2019 13:34	12.3294	6.27902
10/15/2019 13:34	12.207	6.32535
10/15/2019 13:35	12.3253	6.22953
10/15/2019 13:35	12.1948	6.3162
10/15/2019 13:36	12.2435	6.30396
10/15/2019 13:36	12.2455	6.31225
10/15/2019 13:37	12.2969	6.2285
10/15/2019 13:37	12.4105	6.20111
10/15/2019 13:38	12.447	6.17214
10/15/2019 13:38	12.3267	6.26268
10/15/2019 13:39	12.2489	6.24982
10/15/2019 13:39	12.3537	6.2255
10/15/2019 13:40	12.2793	6.2716
10/15/2019 13:40	12.3632	6.19606
10/15/2019 13:41	12.4193	6.16425
10/15/2019 13:41	12.3943	6.20324
10/15/2019 13:42	12.1826	6.42505
10/15/2019 13:42	12.136	6.38061
10/15/2019 13:43	12.1603	6.37485
10/15/2019 13:43	12.2604	6.28999
10/15/2019 13:44	12.2387	6.29978
10/15/2019 13:44	12.1988	6.30002
10/15/2019 13:45	12.2557	6.32425
10/15/2019 13:45	12.3179	6.25289
10/15/2019 13:46	12.3152	6.2922
10/15/2019 13:46	12.2949	6.2997
10/15/2019 13:47	12.3713	6.25613
10/15/2019 13:47	12.4051	6.24413
10/15/2019 13:48	12.303	6.27121
10/15/2019 13:48	12.2901	6.32046
10/15/2019 13:49	12.3747	6.21532
10/15/2019 13:49	12.3348	6.27002
10/15/2019 13:50	12.2949	6.29102
10/15/2019 13:50	12.3544	6.2139
10/15/2019 13:51	12.4213	6.23576
10/15/2019 13:51	12.3666	6.27784
10/15/2019 13:52	12.2983	6.29276
10/15/2019 13:52	12.4071	6.257
10/15/2019 13:53	12.3517	6.28912
10/15/2019 13:53	12.4247	6.20885
10/15/2019 13:54	12.2759	6.28715
10/15/2019 13:54	12.4592	6.08153
10/15/2019 13:55	12.4646	6.15036

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 13:55	12.3557	6.2551
10/15/2019 13:56	12.3889	6.14736
10/15/2019 13:56	12.4768	6.09147
10/15/2019 13:57	12.5093	6.06219
10/15/2019 13:57	12.4092	6.2094
10/15/2019 13:58	12.4525	6.15928
10/15/2019 13:58	12.4707	6.1071
10/15/2019 13:59	12.5532	6.04356
10/15/2019 13:59	12.4382	6.17562
10/15/2019 14:00	12.4876	6.09866
10/15/2019 14:00	12.5113	6.06637
10/15/2019 14:01	12.539	6.05588
10/15/2019 14:01	12.4396	6.18146
10/15/2019 14:02	12.4883	6.10742
10/15/2019 14:02	12.5931	6.07166
10/15/2019 14:03	12.4525	6.16433
10/15/2019 14:03	12.3848	6.24753
10/15/2019 14:04	12.4349	6.19953
10/15/2019 14:04	12.4193	6.17704
10/15/2019 14:05	12.4044	6.17483
10/15/2019 14:05	12.4288	6.14436
10/15/2019 14:06	12.4761	6.10805
10/15/2019 14:06	12.4937	6.12313
10/15/2019 14:07	12.4978	6.11042
10/15/2019 14:07	12.5404	6.07861
10/15/2019 14:08	12.535	6.12826
10/15/2019 14:08	12.516	6.06898
10/15/2019 14:09	12.4443	6.16725
10/15/2019 14:09	12.4443	6.12881
10/15/2019 14:10	12.5519	6.06361
10/15/2019 14:10	12.4261	6.15588
10/15/2019 14:11	12.4592	6.1742
10/15/2019 14:11	12.422	6.14846
10/15/2019 14:12	12.5316	6.06195
10/15/2019 14:12	12.4734	6.16425
10/15/2019 14:13	12.5431	6.07703
10/15/2019 14:13	12.7899	5.82807
10/15/2019 14:14	12.8021	5.89919
10/15/2019 14:14	12.6276	6.06582
10/15/2019 14:15	12.4606	6.17664
10/15/2019 14:15	12.5174	6.10237
10/15/2019 14:16	12.4606	6.11152
10/15/2019 14:16	12.4896	6.1543
10/15/2019 14:17	12.4951	6.09471
10/15/2019 14:17	12.5498	6.04767
10/15/2019 14:18	12.489	6.1693

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 14:18	12.6019	6.07869
10/15/2019 14:19	12.5438	6.12155
10/15/2019 14:19	12.4268	6.18193
10/15/2019 14:20	12.2861	6.33483
10/15/2019 14:20	12.2671	6.29765
10/15/2019 14:21	12.2137	6.36222
10/15/2019 14:21	12.142	6.34477
10/15/2019 14:22	12.1495	6.38195
10/15/2019 14:22	12.1955	6.31999
10/15/2019 14:23	12.1738	6.37761
10/15/2019 14:23	12.0778	6.42734
10/15/2019 14:24	12.1968	6.35622
10/15/2019 14:24	12.09	6.4046
10/15/2019 14:25	12.1035	6.36032
10/15/2019 14:25	12.1082	6.34193
10/15/2019 14:26	12.1096	6.29039
10/15/2019 14:26	12.1217	6.38953
10/15/2019 14:27	12.0048	6.40524
10/15/2019 14:27	12.0541	6.41897
10/15/2019 14:28	12.0095	6.45062
10/15/2019 14:28	12.0866	6.4215
10/15/2019 14:29	11.975	6.46696
10/15/2019 14:29	12.0419	6.46649
10/15/2019 14:30	12.0487	6.45204
10/15/2019 14:30	12.0521	6.43689
10/15/2019 14:31	12.0162	6.4758
10/15/2019 14:31	12.0338	6.43089
10/15/2019 14:32	12.0338	6.45062
10/15/2019 14:32	12.0264	6.43397
10/15/2019 14:33	11.9567	6.47288
10/15/2019 14:33	12.0879	6.38021
10/15/2019 14:34	12.1035	6.36695
10/15/2019 14:34	11.9621	6.46467
10/15/2019 14:35	12.0703	6.42663
10/15/2019 14:35	12.0947	6.38116
10/15/2019 14:36	12.0068	6.44723
10/15/2019 14:36	11.8999	6.51677
10/15/2019 14:37	11.9642	6.48393
10/15/2019 14:37	11.9743	6.50485
10/15/2019 14:38	11.9818	6.46246
10/15/2019 14:38	11.9912	6.47446
10/15/2019 14:39	12.0927	6.381
10/15/2019 14:39	12.1305	6.38321
10/15/2019 14:40	12.0636	6.42765
10/15/2019 14:40	12.067	6.42323
10/15/2019 14:41	12.1109	6.39576

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 14:41	12.1468	6.3548
10/15/2019 14:42	12.0697	6.40674
10/15/2019 14:42	12.1116	6.38274
10/15/2019 14:43	12.1299	6.35598
10/15/2019 14:43	12.1664	6.29954
10/15/2019 14:44	12.1042	6.40168
10/15/2019 14:44	12.1853	6.32164
10/15/2019 14:45	12.1948	6.34896
10/15/2019 14:45	12.0967	6.41337
10/15/2019 14:46	12.1109	6.39861
10/15/2019 14:46	12.1103	6.37406
10/15/2019 14:47	12.1691	6.33191
10/15/2019 14:47	12.0649	6.38598
10/15/2019 14:48	12.1238	6.3638
10/15/2019 14:48	12.1698	6.30096
10/15/2019 14:49	12.5059	6.01159
10/15/2019 14:49	12.9732	5.73777
10/15/2019 14:50	12.7595	5.95973
10/15/2019 14:50	12.5769	6.08918
10/15/2019 14:51	12.3152	6.2424
10/15/2019 14:51	12.23	6.33364
10/15/2019 14:52	12.3064	6.23924
10/15/2019 14:52	12.4044	6.14349
10/15/2019 14:53	12.3652	6.18975
10/15/2019 14:53	12.282	6.24658
10/15/2019 14:54	12.3172	6.24255
10/15/2019 14:54	12.3483	6.21011
10/15/2019 14:55	12.2536	6.2971
10/15/2019 14:55	12.3199	6.23979
10/15/2019 14:56	12.3334	6.27121
10/15/2019 14:56	12.2989	6.25384
10/15/2019 14:57	12.3057	6.22337
10/15/2019 14:57	12.2502	6.28147
10/15/2019 14:58	12.3375	6.22661
10/15/2019 14:58	12.1894	6.25431
10/15/2019 14:59	12.2279	6.34367
10/15/2019 14:59	12.1677	6.31612
10/15/2019 15:00	12.1637	6.33585
10/15/2019 15:00	12.071	6.39513
10/15/2019 15:01	12.2049	6.3409
10/15/2019 15:01	12.142	6.37674
10/15/2019 15:02	12.2259	6.27081
10/15/2019 15:02	12.1894	6.35346
10/15/2019 15:03	12.2212	6.33964
10/15/2019 15:03	12.1089	6.40863
10/15/2019 15:04	12.2103	6.27468

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 15:04	12.1272	6.37682
10/15/2019 15:05	12.1366	6.34319
10/15/2019 15:05	12.2137	6.31572
10/15/2019 15:06	12.1407	6.37785
10/15/2019 15:06	12.2597	6.30357
10/15/2019 15:07	12.14	6.39055
10/15/2019 15:07	12.0818	6.41897
10/15/2019 15:08	12.1136	6.41329
10/15/2019 15:08	12.1197	6.40753
10/15/2019 15:09	12.1035	6.39932
10/15/2019 15:09	12.3882	6.14973
10/15/2019 15:10	12.3929	6.16891
10/15/2019 15:10	12.3625	6.22021
10/15/2019 15:11	12.4051	6.18272
10/15/2019 15:11	12.2962	6.2184
10/15/2019 15:12	12.2502	6.28676
10/15/2019 15:12	12.1833	6.30191
10/15/2019 15:13	12.184	6.27649
10/15/2019 15:13	12.1738	6.35259
10/15/2019 15:14	12.2868	6.23419
10/15/2019 15:14	12.2272	6.31328
10/15/2019 15:15	12.1867	6.25258
10/15/2019 15:15	12.1711	6.31659
10/15/2019 15:16	12.2759	6.22724
10/15/2019 15:16	12.3584	6.24468
10/15/2019 15:17	12.163	6.29094
10/15/2019 15:17	12.2435	6.30302
10/15/2019 15:18	12.278	6.26268
10/15/2019 15:18	12.2144	6.28865
10/15/2019 15:19	12.1718	6.36056
10/15/2019 15:19	12.1502	6.3563
10/15/2019 15:20	12.2015	6.31959
10/15/2019 15:20	12.2543	6.25779
10/15/2019 15:21	12.2117	6.29852
10/15/2019 15:21	12.2029	6.29205
10/15/2019 15:22	12.2354	6.31786
10/15/2019 15:22	12.1042	6.38408
10/15/2019 15:23	12.1035	6.43634
10/15/2019 15:23	12.0994	6.4387
10/15/2019 15:24	12.1603	6.36553
10/15/2019 15:24	11.9682	6.49885
10/15/2019 15:25	12.0609	6.43657
10/15/2019 15:25	12.1035	6.42663
10/15/2019 15:26	12.1393	6.30657
10/15/2019 15:26	12.0075	6.46096
10/15/2019 15:27	12.136	6.37224

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 15:27	12.1968	6.38392
10/15/2019 15:28	12.0419	6.40184
10/15/2019 15:28	12.0906	6.44636
10/15/2019 15:29	12.0217	6.4406
10/15/2019 15:29	12.1075	6.39616
10/15/2019 15:30	11.9878	6.45962
10/15/2019 15:30	12.0629	6.44857
10/15/2019 15:31	12.117	6.36987
10/15/2019 15:31	12.1109	6.38463
10/15/2019 15:32	12.1001	6.41084
10/15/2019 15:32	12.1224	6.37445
10/15/2019 15:33	12.1738	6.38661
10/15/2019 15:33	12.1603	6.36214
10/15/2019 15:34	12.1048	6.42181
10/15/2019 15:34	12.0724	6.42379
10/15/2019 15:35	12.1278	6.38858
10/15/2019 15:35	12.1015	6.3649
10/15/2019 15:36	12.0392	6.44944
10/15/2019 15:36	12.2272	6.2986
10/15/2019 15:37	12.211	6.28013
10/15/2019 15:37	12.1265	6.36624
10/15/2019 15:38	12.1711	6.35117
10/15/2019 15:38	12.1725	6.36332
10/15/2019 15:39	12.1427	6.34311
10/15/2019 15:39	12.1021	6.41802
10/15/2019 15:40	12.1157	6.41786
10/15/2019 15:40	12.0568	6.45125
10/15/2019 15:41	12.0582	6.41818
10/15/2019 15:41	12.0568	6.45386
10/15/2019 15:42	12.0014	6.46878
10/15/2019 15:42	12.0683	6.41273
10/15/2019 15:43	12.0014	6.49451
10/15/2019 15:43	11.9966	6.47083
10/15/2019 15:44	12.0027	6.45489
10/15/2019 15:44	12.0649	6.38432
10/15/2019 15:45	12.0629	6.40232
10/15/2019 15:45	12.138	6.36024
10/15/2019 15:46	12.1535	6.39158
10/15/2019 15:46	12.1657	6.3031
10/15/2019 15:47	12.1136	6.37642
10/15/2019 15:47	12.0954	6.35795
10/15/2019 15:48	12.1684	6.34872
10/15/2019 15:48	12.0176	6.4728
10/15/2019 15:49	12.0541	6.44447
10/15/2019 15:49	11.9168	6.56018
10/15/2019 15:50	11.8627	6.60194

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 15:50	11.8019	6.61788
10/15/2019 15:51	11.8005	6.63959
10/15/2019 15:51	11.6369	6.74694
10/15/2019 15:52	11.6179	6.72097
10/15/2019 15:52	11.5855	6.77433
10/15/2019 15:53	11.5888	6.78388
10/15/2019 15:53	11.6112	6.83487
10/15/2019 15:54	11.4725	6.89644
10/15/2019 15:54	11.5645	6.90497
10/15/2019 15:55	11.4772	6.91136
10/15/2019 15:55	11.4204	6.96417
10/15/2019 15:56	11.3724	6.99069
10/15/2019 15:56	11.4962	6.87939
10/15/2019 15:57	11.5002	6.87118
10/15/2019 15:57	11.4928	6.8168
10/15/2019 15:58	11.4373	6.90883
10/15/2019 15:58	11.553	6.81735
10/15/2019 15:59	11.7092	6.72547
10/15/2019 15:59	11.5719	6.79375
10/15/2019 16:00	11.6402	6.79635
10/15/2019 16:00	11.6402	6.73439
10/15/2019 16:01	11.6294	6.73131
10/15/2019 16:01	11.5773	6.81174
10/15/2019 16:02	11.6916	6.69768
10/15/2019 16:02	11.7586	6.65238
10/15/2019 16:03	11.7545	6.66051
10/15/2019 16:03	11.697	6.70929
10/15/2019 16:04	11.718	6.69808
10/15/2019 16:04	11.7741	6.73289
10/15/2019 16:05	11.7207	6.69682
10/15/2019 16:05	11.6416	6.82864
10/15/2019 16:06	11.7031	6.73068
10/15/2019 16:06	11.7342	6.69476
10/15/2019 16:07	11.6125	6.80425
10/15/2019 16:07	11.6064	6.80551
10/15/2019 16:08	11.6247	6.75286
10/15/2019 16:08	11.741	6.67503
10/15/2019 16:09	11.6862	6.70692
10/15/2019 16:09	11.7647	6.6564
10/15/2019 16:10	11.8593	6.62096
10/15/2019 16:10	11.8884	6.55963
10/15/2019 16:11	11.8005	6.65672
10/15/2019 16:11	11.8228	6.61954
10/15/2019 16:12	11.8654	6.58434
10/15/2019 16:12	11.8668	6.59412
10/15/2019 16:13	11.8593	6.58939

Analyzer Data - 10/15/2019

TIME	O2	CO2
10/15/2019 16:13	12.3287	6.20711
10/15/2019 16:14	12.3294	6.23971
10/15/2019 16:14	11.885	6.61283
10/15/2019 16:15	11.7856	6.61978
10/15/2019 16:15	11.8052	6.64338
10/15/2019 16:16	11.8073	6.56721
10/15/2019 16:16	11.7302	6.70889
10/15/2019 16:17	11.7072	6.67393
10/15/2019 16:17	11.791	6.66722
10/15/2019 16:18	11.7315	6.61559
10/15/2019 16:18	11.7701	6.62664
10/15/2019 16:19	11.7816	6.60502
10/15/2019 16:19	11.9209	6.51409
10/15/2019 16:20	11.8228	6.57155
10/15/2019 16:20	11.8817	6.55426
End Run 4	**12.201**	**6.322**
10/15/2019 16:21	11.881	6.53966
10/15/2019 16:21	11.9229	6.46578
10/15/2019 18:50	13.7036	5.07212
10/15/2019 18:51	14.2223	4.70177
10/15/2019 18:51	14.4482	4.53506
10/15/2019 18:52	14.3995	4.59158
10/15/2019 18:52	14.3454	4.62986
10/15/2019 18:53	14.2534	4.73752
10/15/2019 18:53	14.2	4.73223
10/15/2019 18:54	14.3555	4.55716
10/15/2019 18:54	14.3082	4.67864
10/15/2019 18:55	14.227	4.65472
10/15/2019 18:55	14.2493	4.68559
10/15/2019 19:48	20.4773	-0.0412
10/15/2019 19:49	20.4786	-0.04207
10/15/2019 19:49	20.4779	-0.04144
10/15/2019 19:50	9.86363	10.2186
10/15/2019 19:50	9.78856	10.2684
10/15/2019 19:51	9.77774	10.2186
10/15/2019 19:51	19.4398	0.102298
10/15/2019 19:52	0.080196	-0.04807
10/15/2019 19:52	0.053757	-0.06394
10/15/2019 19:53	0.046184	-0.06851
10/15/2019 19:53	19.103	-0.03197
10/16/2019 10:12	12.2989	6.26718

ncr o2 16.csv "MDY4c./:"
10/17/2019 12:23
; 10/16/2019 10:13:45 ""
1

TIME	O2	CO2
10/16/2019 10:13	12.138	6.40184
10/16/2019 10:14	11.785	3.30756
10/16/2019 10:14	9.79803	10.3513
10/16/2019 10:15	9.79194	10.3939
10/16/2019 10:15	9.78789	10.3339
10/16/2019 10:16	11.8066	6.50935
10/16/2019 10:16	0.195351	7.50E-03
10/16/2019 10:17	0.058558	-0.03457
10/16/2019 10:17	0.049024	-0.0472
10/16/2019 10:18	0.045372	-0.05139
10/16/2019 10:18	0.038949	-0.05715
10/16/2019 10:19	0.034621	-0.05541
10/16/2019 10:19	0.033674	-0.05873
10/16/2019 10:20	10.7841	7.05218
10/16/2019 10:20	11.3285	6.88713
10/16/2019 11:55	12.4775	6.05106
10/16/2019 11:55	12.5363	6.05588
10/16/2019 11:56	12.3801	6.1948
10/16/2019 11:56	12.4951	6.11089
10/16/2019 11:57	12.5289	6.06661
10/16/2019 11:57	12.3409	6.22243
10/16/2019 11:58	12.4572	6.12399
10/16/2019 11:58	12.468	6.12218
10/16/2019 11:59	12.4227	6.11034
10/16/2019 11:59	12.4518	6.14689
Run 5		
10/16/2019 12:00	12.3963	6.11981
10/16/2019 12:00	12.2827	6.2776
10/16/2019 12:01	11.8107	6.60399
10/16/2019 12:01	11.5848	6.76178
10/16/2019 12:02	11.463	6.88002
10/16/2019 12:02	11.2771	6.95903
10/16/2019 12:03	11.4299	6.90433
10/16/2019 12:03	11.3711	6.93867
10/16/2019 12:04	11.5726	6.77614
10/16/2019 12:04	11.5117	6.80582
10/16/2019 12:05	11.5273	6.8168
10/16/2019 12:05	11.5577	6.79154
10/16/2019 12:06	11.5618	6.76707
10/16/2019 12:06	11.6159	6.72223
10/16/2019 12:07	11.7227	6.63146
10/16/2019 12:07	11.768	6.6418

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 12:08	11.5814	6.7456
10/16/2019 12:08	11.7451	6.62183
10/16/2019 12:09	11.5861	6.79027
10/16/2019 12:09	11.6064	6.74023
10/16/2019 12:10	11.7058	6.62957
10/16/2019 12:10	11.6369	6.686
10/16/2019 12:11	11.6815	6.67479
10/16/2019 12:11	11.5767	6.72231
10/16/2019 12:12	11.7018	6.64433
10/16/2019 12:12	11.6186	6.77417
10/16/2019 12:13	11.6051	6.7561
10/16/2019 12:13	11.6125	6.69919
10/16/2019 12:14	11.5753	6.73123
10/16/2019 12:14	11.6226	6.76265
10/16/2019 12:15	11.5956	6.77907
10/16/2019 12:15	11.6254	6.66951
10/16/2019 12:16	11.7376	6.66982
10/16/2019 12:16	11.6193	6.72255
10/16/2019 12:17	11.622	6.71537
10/16/2019 12:17	11.5821	6.72594
10/16/2019 12:18	11.7735	6.62688
10/16/2019 12:18	11.6254	6.71876
10/16/2019 12:19	11.6504	6.69445
10/16/2019 12:19	11.6287	6.69761
10/16/2019 12:20	11.7254	6.63414
10/16/2019 12:20	11.5821	6.79256
10/16/2019 12:21	11.5611	6.74449
10/16/2019 12:21	11.6443	6.68687
10/16/2019 12:22	11.6193	6.69966
10/16/2019 12:22	11.6084	6.73723
10/16/2019 12:23	11.4752	6.81088
10/16/2019 12:23	11.6267	6.75839
10/16/2019 12:24	11.5327	6.79967
10/16/2019 12:24	11.67	6.68924
10/16/2019 12:25	11.741	6.62649
10/16/2019 12:25	11.72	6.70021
10/16/2019 12:26	11.6673	6.69453
10/16/2019 12:26	11.5713	6.77654
10/16/2019 12:27	11.4529	6.84797
10/16/2019 12:27	11.6538	6.6519
10/16/2019 12:28	11.7843	6.62704
10/16/2019 12:28	11.8052	6.56776
10/16/2019 12:29	11.8208	6.62065
10/16/2019 12:29	11.7194	6.64251
10/16/2019 12:30	11.9412	6.52482
10/16/2019 12:30	11.6084	6.80606

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 12:31	11.7647	6.58584
10/16/2019 12:31	11.8289	6.61765
10/16/2019 12:32	11.7424	6.60344
10/16/2019 12:32	11.7937	6.6017
10/16/2019 12:33	11.7396	6.63478
10/16/2019 12:33	11.95	6.52529
10/16/2019 12:34	11.996	6.42134
10/16/2019 12:34	12.1278	6.42118
10/16/2019 12:35	11.8999	6.52671
10/16/2019 12:35	12.0048	6.46744
10/16/2019 12:36	11.7674	6.59981
10/16/2019 12:36	11.9094	6.50477
10/16/2019 12:37	11.8282	6.55908
10/16/2019 12:37	11.9405	6.50027
10/16/2019 12:38	11.7349	6.58623
10/16/2019 12:38	12.0183	6.43555
10/16/2019 12:39	11.7491	6.67045
10/16/2019 12:39	11.8147	6.55324
10/16/2019 12:40	11.8411	6.59515
10/16/2019 12:40	11.7944	6.56737
10/16/2019 12:41	11.9804	6.47541
10/16/2019 12:41	11.8986	6.49459
10/16/2019 12:42	12.0068	6.46625
10/16/2019 12:42	12.1224	6.3233
10/16/2019 12:43	12.2509	6.27713
10/16/2019 12:43	12.1481	6.34311
10/16/2019 12:44	12.1684	6.32354
10/16/2019 12:44	12.2428	6.31415
10/16/2019 12:45	12.2475	6.22685
10/16/2019 12:45	12.2144	6.32575
10/16/2019 12:46	11.8952	6.52782
10/16/2019 12:46	11.6585	6.73123
10/16/2019 12:47	11.5199	6.77843
10/16/2019 12:47	11.601	6.76146
10/16/2019 12:48	11.4394	6.89131
10/16/2019 12:48	11.5949	6.7351
10/16/2019 12:49	11.5192	6.85618
10/16/2019 12:49	11.5503	6.8074
10/16/2019 12:50	11.551	6.85295
10/16/2019 12:50	11.4549	6.84663
10/16/2019 12:51	11.6051	6.78735
10/16/2019 12:51	11.5976	6.72602
10/16/2019 12:52	11.5192	6.84671
10/16/2019 12:52	11.5232	6.75436
10/16/2019 12:53	11.5361	6.86881
10/16/2019 12:53	11.4035	6.92028

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 12:54	11.6145	6.70834
10/16/2019 12:54	11.5625	6.78562
10/16/2019 12:55	11.7288	6.65475
10/16/2019 12:55	11.7383	6.61891
10/16/2019 12:56	11.8059	6.52782
10/16/2019 12:56	11.9371	6.43886
10/16/2019 12:57	12.1096	6.31494
10/16/2019 12:57	12.2949	6.24429
10/16/2019 12:58	12.3497	6.14396
10/16/2019 12:58	12.3591	6.14239
10/16/2019 12:59	12.4667	6.0794
10/16/2019 12:59	12.3841	6.16188
10/16/2019 13:00	12.3267	6.20656
10/16/2019 13:00	12.4545	6.11484
10/16/2019 13:01	12.4856	6.05919
10/16/2019 13:01	12.5086	6.06969
10/16/2019 13:02	12.4328	6.1416
10/16/2019 13:02	12.3334	6.18414
10/16/2019 13:03	12.3869	6.13339
10/16/2019 13:03	12.4464	6.08776
10/16/2019 13:04	12.3368	6.17767
10/16/2019 13:04	12.3767	6.16157
10/16/2019 13:05	12.3929	6.15123
10/16/2019 13:05	12.466	6.09511
10/16/2019 13:06	12.1103	6.43815
10/16/2019 13:06	11.9824	6.49151
10/16/2019 13:07	11.8059	6.60873
10/16/2019 13:07	11.7897	6.57431
10/16/2019 13:08	11.6713	6.69879
10/16/2019 13:08	11.5314	6.79833
10/16/2019 13:09	12.2908	6.18864
10/16/2019 13:09	12.1299	6.37761
10/16/2019 13:10	11.9791	6.44526
10/16/2019 13:10	11.9824	6.47067
10/16/2019 13:11	11.9716	6.48267
10/16/2019 13:11	11.7816	6.64938
10/16/2019 13:12	11.7613	6.60928
10/16/2019 13:12	11.8134	6.58876
10/16/2019 13:13	11.8012	6.59018
10/16/2019 13:13	12.0419	6.3964
10/16/2019 13:14	11.9168	6.52577
10/16/2019 13:14	11.5679	6.76691
10/16/2019 13:15	11.3515	6.92344
10/16/2019 13:15	11.4996	6.80961
10/16/2019 13:16	11.2892	7.01658
10/16/2019 13:16	11.2013	7.0446

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 13:17	11.2277	7.06631
10/16/2019 13:17	11.273	7.02171
10/16/2019 13:18	11.411	6.90954
10/16/2019 13:18	11.3291	6.98469
10/16/2019 13:19	11.3555	6.98998
10/16/2019 13:19	11.2703	7.01287
10/16/2019 13:20	11.2669	7.02463
10/16/2019 13:20	11.4292	6.88855
10/16/2019 13:21	11.296	7.0311
10/16/2019 13:21	11.4549	6.87797
10/16/2019 13:22	11.2899	7.05028
10/16/2019 13:22	11.1452	7.14666
10/16/2019 13:23	11.2561	7.0221
10/16/2019 13:23	11.48	6.8595
10/16/2019 13:24	11.346	6.90307
10/16/2019 13:24	11.3569	6.95896
10/16/2019 13:25	11.3609	6.96709
10/16/2019 13:25	11.4644	6.8299
10/16/2019 13:26	11.5232	6.85753
10/16/2019 13:26	11.574	6.80511
10/16/2019 13:27	11.4583	6.96614
10/16/2019 13:27	11.319	6.93157
10/16/2019 13:28	11.3379	6.98548
10/16/2019 13:28	11.4116	6.90568
10/16/2019 13:29	11.4881	6.82295
10/16/2019 13:29	11.6396	6.65546
10/16/2019 13:30	11.5956	6.78009
10/16/2019 13:30	11.528	6.76233
10/16/2019 13:31	11.5807	6.77212
10/16/2019 13:31	11.5983	6.69761
10/16/2019 13:32	11.7106	6.67969
10/16/2019 13:32	11.4779	6.87892
10/16/2019 13:33	11.5124	6.75894
10/16/2019 13:33	11.5909	6.72594
10/16/2019 13:34	11.7802	6.62396
10/16/2019 13:34	11.551	6.77693
10/16/2019 13:35	11.6206	6.63833
10/16/2019 13:35	11.7626	6.63146
10/16/2019 13:36	11.5489	6.79904
10/16/2019 13:36	11.5036	6.81395
10/16/2019 13:37	11.6497	6.65838
10/16/2019 13:37	11.6538	6.72642
10/16/2019 13:38	11.5219	6.81167
10/16/2019 13:38	11.5997	6.71174
10/16/2019 13:39	11.505	6.75404
10/16/2019 13:39	11.5882	6.77315

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 13:40	11.557	6.77449
10/16/2019 13:40	11.6396	6.63896
10/16/2019 13:41	11.6673	6.69634
10/16/2019 13:41	11.6571	6.60446
10/16/2019 13:42	11.6828	6.65553
10/16/2019 13:42	11.5983	6.75475
10/16/2019 13:43	11.67	6.67156
10/16/2019 13:43	11.7775	6.61946
10/16/2019 13:44	11.8059	6.58205
10/16/2019 13:44	11.6625	6.69011
10/16/2019 13:45	11.764	6.62443
10/16/2019 13:45	11.7153	6.67495
10/16/2019 13:46	11.7248	6.61654
10/16/2019 13:46	11.7194	6.62617
10/16/2019 13:47	11.7836	6.54242
10/16/2019 13:47	11.8864	6.49025
10/16/2019 13:48	11.9676	6.47288
10/16/2019 13:48	11.835	6.54858
10/16/2019 13:49	11.929	6.5054
10/16/2019 13:49	11.8965	6.48598
10/16/2019 13:50	11.8675	6.54298
10/16/2019 13:50	11.9222	6.49088
10/16/2019 13:51	11.858	6.57581
10/16/2019 13:51	11.8999	6.47833
10/16/2019 13:52	11.5084	6.81806
10/16/2019 13:52	11.3947	6.94293
10/16/2019 13:53	11.5131	6.80085
10/16/2019 13:53	11.388	6.86976
10/16/2019 13:54	11.4712	6.82406
10/16/2019 13:54	11.3792	6.9588
10/16/2019 13:55	11.3007	6.95012
10/16/2019 13:55	11.3041	6.95296
10/16/2019 13:56	11.4739	6.77922
10/16/2019 13:56	11.5726	6.76715
10/16/2019 13:57	11.7309	6.61236
10/16/2019 13:57	11.4691	6.84426
10/16/2019 13:58	11.626	6.66003
10/16/2019 13:58	11.6335	6.74662
10/16/2019 13:59	11.4258	6.85476
10/16/2019 13:59	11.6308	6.69524
10/16/2019 14:00	11.6734	6.69161
10/16/2019 14:00	11.6801	6.62609
10/16/2019 14:01	11.6497	6.67669
10/16/2019 14:01	11.6747	6.6594
10/16/2019 14:02	11.6889	6.62365
10/16/2019 14:02	11.7403	6.60375

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 14:03	11.3866	6.92273
10/16/2019 14:03	11.2013	7.10309
10/16/2019 14:04	11.1249	7.14342
10/16/2019 14:04	11.0471	7.12669
10/16/2019 14:05	10.9484	7.33421
10/16/2019 14:05	11.0485	7.21139
10/16/2019 14:06	11.0931	7.17871
10/16/2019 14:06	10.989	7.25796
10/16/2019 14:07	11.016	7.26514
10/16/2019 14:07	11.1553	7.08067
10/16/2019 14:08	11.2811	6.9723
10/16/2019 14:08	11.3501	6.95525
10/16/2019 14:09	11.2365	7.04484
10/16/2019 14:09	11.3176	6.97806
10/16/2019 14:10	11.2081	7.0772
10/16/2019 14:10	11.1979	7.10688
10/16/2019 14:11	11.2622	7.06741
10/16/2019 14:11	11.2804	7.01595
10/16/2019 14:12	11.3535	6.93575
10/16/2019 14:12	11.3264	6.98848
10/16/2019 14:13	11.3095	6.97387
10/16/2019 14:13	11.3853	6.90007
10/16/2019 14:14	11.3968	6.90718
10/16/2019 14:14	11.2426	7.05675
10/16/2019 14:15	11.3203	7.00237
10/16/2019 14:15	11.3663	6.92865
10/16/2019 14:16	11.3237	7.01153
10/16/2019 14:16	11.392	6.92486
10/16/2019 14:17	11.3772	6.94009
10/16/2019 14:17	11.3379	6.88736
10/16/2019 14:18	11.3494	6.9288
10/16/2019 14:18	11.4238	6.8775
10/16/2019 14:19	11.4029	6.89699
10/16/2019 14:19	11.4414	6.86376
10/16/2019 14:20	11.4766	6.88231
10/16/2019 14:20	11.2196	7.13293
10/16/2019 14:21	11.1168	7.1559
10/16/2019 14:21	11.2527	7.04491
10/16/2019 14:22	11.3799	6.92857
10/16/2019 14:22	11.3325	6.93393
10/16/2019 14:23	11.4461	6.86668
10/16/2019 14:23	11.2027	7.03821
10/16/2019 14:24	11.1743	7.02936
10/16/2019 14:24	11.2919	6.94751
10/16/2019 14:25	11.2804	6.98737
10/16/2019 14:25	11.2385	6.86313

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 14:26	11.3183	6.855
10/16/2019 14:26	11.1249	7.05297
10/16/2019 14:27	11.2196	7.01184
10/16/2019 14:27	11.154	7.03023
10/16/2019 14:28	11.1939	7.03852
10/16/2019 14:28	10.9775	7.16545
10/16/2019 14:29	10.97	7.21912
10/16/2019 14:29	11.0377	7.13072
10/16/2019 14:30	11.1763	7.05833
10/16/2019 14:30	11.1263	7.14319
10/16/2019 14:31	11.0458	7.1555
10/16/2019 14:31	11.1256	7.1094
10/16/2019 14:32	11.1364	7.08533
10/16/2019 14:32	10.991	7.22346
10/16/2019 14:33	11.1073	7.13514
10/16/2019 14:33	11.1844	7.06275
10/16/2019 14:34	10.9957	7.22346
10/16/2019 14:34	10.9795	7.25093
10/16/2019 14:35	11.0465	7.175
10/16/2019 14:35	11.1168	7.1559
10/16/2019 14:36	10.9281	7.28393
10/16/2019 14:36	11.1357	7.157
10/16/2019 14:37	11.0681	7.1615
10/16/2019 14:37	11.0884	7.17958
10/16/2019 14:38	10.7786	7.43974
10/16/2019 14:38	10.9978	7.22307
10/16/2019 14:39	11.0248	7.22962
10/16/2019 14:39	11.0072	7.20491
10/16/2019 14:40	11.0661	7.12156
10/16/2019 14:40	11.649	6.63012
10/16/2019 14:41	11.6112	6.79067
10/16/2019 14:41	10.8639	7.35449
10/16/2019 14:42	11.035	7.18707
10/16/2019 14:42	10.8882	7.33705
10/16/2019 14:43	10.8524	7.33429
10/16/2019 14:43	10.9186	7.26277
10/16/2019 14:44	11.1364	7.08675
10/16/2019 14:44	11.2703	6.98864
10/16/2019 14:45	11.6078	6.69729
10/16/2019 14:45	11.269	7.07886
10/16/2019 14:46	11.1797	7.06923
10/16/2019 14:46	11.3893	6.91957
10/16/2019 14:47	11.5057	6.89723
10/16/2019 14:47	11.3244	7.08864
10/16/2019 14:48	11.2608	7.10909
10/16/2019 14:48	11.5347	6.86203

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 14:49	11.457	6.94238
10/16/2019 14:49	11.3366	7.02976
10/16/2019 14:50	11.4678	6.8962
10/16/2019 14:50	11.3197	6.96772
10/16/2019 14:51	11.4049	6.90686
10/16/2019 14:51	11.4326	6.90299
10/16/2019 14:52	11.5374	6.80432
10/16/2019 14:52	11.3711	6.92841
10/16/2019 14:53	11.4962	6.84111
10/16/2019 14:53	11.4685	6.82587
10/16/2019 14:54	11.5124	6.74662
10/16/2019 14:54	11.4739	6.84403
10/16/2019 14:55	11.5124	6.84063
10/16/2019 14:55	11.6558	6.70866
10/16/2019 14:56	11.5374	6.71781
10/16/2019 14:56	11.3271	6.9041
10/16/2019 14:57	11.3968	6.88484
10/16/2019 14:57	11.5205	6.80803
10/16/2019 14:58	11.3203	6.97806
10/16/2019 14:58	11.2852	7.00647
10/16/2019 14:59	11.3772	6.93717
10/16/2019 14:59	11.4725	6.78167
10/16/2019 15:00	11.6903	6.64101
10/16/2019 15:00	11.5415	6.80401
10/16/2019 15:01	11.4103	6.87584
10/16/2019 15:01	11.5097	6.76652
10/16/2019 15:02	11.5611	6.73013
10/16/2019 15:02	11.5401	6.73344
10/16/2019 15:03	11.7085	6.66414
10/16/2019 15:03	11.4975	6.78901
10/16/2019 15:04	11.5226	6.77299
10/16/2019 15:04	11.6267	6.70771
10/16/2019 15:05	11.5929	6.73052
10/16/2019 15:05	11.5848	6.73013
10/16/2019 15:06	11.5368	6.80361
10/16/2019 15:06	11.6382	6.65419
10/16/2019 15:07	11.5462	6.74339
10/16/2019 15:07	11.4921	6.75728
10/16/2019 15:08	11.5158	6.78751
10/16/2019 15:08	11.5577	6.78625
10/16/2019 15:09	11.5084	6.85429
10/16/2019 15:09	10.9315	7.33871
10/16/2019 15:10	10.7624	7.41203
10/16/2019 15:10	10.7516	7.40122
10/16/2019 15:11	10.7002	7.4429
10/16/2019 15:11	10.6082	7.52783

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 15:12	10.6529	7.43895
10/16/2019 15:12	10.8652	7.31305
10/16/2019 15:13	10.5568	7.56446
10/16/2019 15:13	10.7665	7.37833
10/16/2019 15:14	10.7786	7.40825
10/16/2019 15:14	10.8199	7.30113
10/16/2019 15:15	11.0377	7.15637
10/16/2019 15:15	11.0018	7.15108
10/16/2019 15:16	11.0309	7.10475
10/16/2019 15:16	11.1695	7.03181
10/16/2019 15:17	11.1432	7.08872
10/16/2019 15:17	11.3176	6.91357
10/16/2019 15:18	11.202	6.98003
10/16/2019 15:18	11.085	7.07609
10/16/2019 15:19	11.2399	7.00119
10/16/2019 15:19	11.2182	7.02005
10/16/2019 15:20	11.1939	6.99779
10/16/2019 15:20	11.2737	6.9528
10/16/2019 15:21	11.3217	6.85934
10/16/2019 15:21	11.2953	6.91317
10/16/2019 15:22	11.1411	7.00711
10/16/2019 15:22	11.1804	7.07601
10/16/2019 15:23	10.9342	7.20128
10/16/2019 15:23	11.1824	6.93196
10/16/2019 15:24	11.0924	7.0768
10/16/2019 15:24	11.0796	7.17673
10/16/2019 15:25	11.158	7.03623
10/16/2019 15:25	11.0951	7.12922
10/16/2019 15:26	10.968	7.2042
10/16/2019 15:26	10.9653	7.20034
10/16/2019 15:27	10.8733	7.23601
10/16/2019 15:27	10.9389	7.17863
10/16/2019 15:28	10.8104	7.3286
10/16/2019 15:28	10.9957	7.13561
10/16/2019 15:29	10.945	7.14737
10/16/2019 15:29	11.5787	6.61299
10/16/2019 15:30	11.789	6.61283
10/16/2019 15:30	11.1161	7.09535
10/16/2019 15:31	11.0194	7.17192
10/16/2019 15:31	10.966	7.19457
10/16/2019 15:32	10.9464	7.21573
10/16/2019 15:32	10.7482	7.38488
10/16/2019 15:33	10.8524	7.22038
10/16/2019 15:33	10.8699	7.27603
10/16/2019 15:34	10.8327	7.29656
10/16/2019 15:34	10.8334	7.32245

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 15:35	10.8882	7.24943
10/16/2019 15:35	10.8287	7.31258
10/16/2019 15:36	11.0897	7.07894
10/16/2019 15:36	10.9809	7.19142
10/16/2019 15:37	10.9653	7.16158
10/16/2019 15:37	11.2148	7.02131
10/16/2019 15:38	11.0174	7.17823
10/16/2019 15:38	11.1533	7.00955
10/16/2019 15:39	11.2378	6.99274
10/16/2019 15:39	11.0728	7.13387
10/16/2019 15:40	11.0539	7.10119
10/16/2019 15:40	11.2358	6.98161
10/16/2019 15:41	11.2345	6.99171
10/16/2019 15:41	11.1276	7.09993
10/16/2019 15:42	11.1432	7.03757
10/16/2019 15:42	11.1046	7.08249
10/16/2019 15:43	11.0066	7.18984
10/16/2019 15:43	11.0011	7.14705
10/16/2019 15:44	11.1411	6.98035
10/16/2019 15:44	11.1662	7.01445
10/16/2019 15:45	11.1655	6.99006
10/16/2019 15:45	11.0972	7.136
10/16/2019 15:46	10.9822	7.19055
10/16/2019 15:46	11.085	7.09954
10/16/2019 15:47	11.2094	6.99455
10/16/2019 15:47	11.1452	7.08557
10/16/2019 15:48	11.1499	7.03292
10/16/2019 15:48	11.3738	6.92872
10/16/2019 15:49	11.1662	7.08478
10/16/2019 15:49	11.1371	7.03639
10/16/2019 15:50	11.1722	7.05297
10/16/2019 15:50	11.1621	7.03718
10/16/2019 15:51	11.3061	7.05068
10/16/2019 15:51	10.9477	7.23538
10/16/2019 15:52	11.0194	7.19252
10/16/2019 15:52	11.1533	7.04468
10/16/2019 15:53	11.156	7.05494
10/16/2019 15:53	11.1432	7.0491
10/16/2019 15:54	11.1479	7.08817
10/16/2019 15:54	11.2155	7.03173
10/16/2019 15:55	11.1242	7.12906
10/16/2019 15:55	11.0661	7.14208
10/16/2019 15:56	11.2311	7.08857
10/16/2019 15:56	11.133	7.12361
10/16/2019 15:57	11.135	7.08809
10/16/2019 15:57	11.129	7.10348

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 15:58	11.2108	6.99416
10/16/2019 15:58	11.3758	6.92296
10/16/2019 15:59	11.2602	6.95911
10/16/2019 15:59	11.246	7.00632
10/16/2019 16:00	11.3055	6.90536
10/16/2019 16:00	11.4306	6.86873
10/16/2019 16:01	10.9504	7.2713
10/16/2019 16:01	10.9112	7.26119
10/16/2019 16:02	11.0904	7.09583
10/16/2019 16:02	11.1053	7.08446
10/16/2019 16:03	11.0958	7.05486
10/16/2019 16:03	11.7843	6.48235
10/16/2019 16:04	11.8878	6.47525
10/16/2019 16:04	11.5023	6.78159
10/16/2019 16:05	11.1973	7.05644
10/16/2019 16:05	11.4664	6.81443
10/16/2019 16:06	11.4238	6.84016
10/16/2019 16:06	11.3981	6.90765
10/16/2019 16:07	11.1601	7.11477
10/16/2019 16:07	11.1804	7.05628
10/16/2019 16:08	11.3122	6.94704
10/16/2019 16:08	11.3535	6.93835
10/16/2019 16:09	11.294	6.9442
10/16/2019 16:09	11.3176	6.94317
10/16/2019 16:10	11.2933	6.92533
10/16/2019 16:10	11.2182	7.06291
10/16/2019 16:11	11.3758	6.88405
10/16/2019 16:11	11.4813	6.87244
10/16/2019 16:12	11.2148	7.04515
10/16/2019 16:12	11.2318	7.06339
10/16/2019 16:13	11.1966	7.0622
10/16/2019 16:13	11.2953	6.98311
10/16/2019 16:14	11.3001	6.9423
10/16/2019 16:14	11.3609	6.95154
10/16/2019 16:15	11.133	7.09204
10/16/2019 16:15	11.3866	6.83479
10/16/2019 16:16	11.3907	6.91688
10/16/2019 16:16	11.2331	7.03923
10/16/2019 16:17	11.3116	6.93346
10/16/2019 16:17	11.4394	6.83684
10/16/2019 16:18	11.388	6.87623
10/16/2019 16:18	11.3602	6.96219
10/16/2019 16:19	11.3312	6.87308
10/16/2019 16:19	11.4022	6.79217
10/16/2019 16:20	11.3819	6.87347
10/16/2019 16:20	11.3947	6.80914

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 16:21	11.3521	6.83985
10/16/2019 16:21	11.3968	6.8389
10/16/2019 16:22	11.4982	6.74039
10/16/2019 16:22	11.434	6.8625
10/16/2019 16:23	11.2771	6.92841
10/16/2019 16:23	11.4549	6.79162
10/16/2019 16:24	11.5523	6.70787
10/16/2019 16:24	11.5192	6.83574
10/16/2019 16:25	11.3305	6.86818
10/16/2019 16:25	11.5165	6.76304
10/16/2019 16:26	11.5699	6.70676
10/16/2019 16:26	11.6166	6.63556
10/16/2019 16:27	11.6997	6.63446
10/16/2019 16:27	11.5029	6.79746
10/16/2019 16:28	11.3048	6.98587
10/16/2019 16:28	11.2351	6.99108
10/16/2019 16:29	11.3745	6.88657
10/16/2019 16:29	11.5496	6.707
10/16/2019 16:30	11.5814	6.71039
10/16/2019 16:30	11.4191	6.81372
10/16/2019 16:31	11.3846	6.88594
10/16/2019 16:31	11.4543	6.78972
10/16/2019 16:32	11.5773	6.72113
10/16/2019 16:32	11.3772	6.9101
10/16/2019 16:33	11.1844	7.06394
10/16/2019 16:33	10.9707	7.21391
10/16/2019 16:34	10.8808	7.31858
10/16/2019 16:34	10.707	7.42277
10/16/2019 16:35	10.8591	7.28053
10/16/2019 16:35	10.8902	7.30153
10/16/2019 16:36	10.8348	7.25985
10/16/2019 16:36	11.0627	7.14642
10/16/2019 16:37	10.8747	7.25914
10/16/2019 16:37	10.966	7.21794
10/16/2019 16:38	10.8341	7.31479
10/16/2019 16:38	10.9646	7.24517
10/16/2019 16:39	10.922	7.26096
10/16/2019 16:39	10.9112	7.23238
10/16/2019 16:40	10.824	7.31818
10/16/2019 16:40	10.9382	7.24501
10/16/2019 16:41	10.9957	7.19607
10/16/2019 16:41	11.0208	7.15929
10/16/2019 16:42	10.9592	7.19536
10/16/2019 16:42	11.1121	7.11682
10/16/2019 16:43	11.0992	7.14729
10/16/2019 16:43	11.035	7.16063

TIME	O2	CO2
10/16/2019 16:44	10.9721	7.24612
10/16/2019 16:44	11.1263	7.10056
10/16/2019 16:45	11.1006	7.16174
10/16/2019 16:45	10.9044	7.28843
End Run 5	**11.430**	**6.868**
10/16/2019 16:46	11.0079	7.23215
10/16/2019 16:46	11.2466	7.00805
10/16/2019 16:47	11.0708	7.16545
10/16/2019 16:47	10.9585	7.2383
10/16/2019 16:48	11.3346	6.92691
10/16/2019 16:48	11.2906	7.02526
10/16/2019 16:49	11.085	7.0727
10/16/2019 16:49	11.0762	7.16276
10/16/2019 16:50	11.0228	7.19331
10/16/2019 16:50	11.1317	7.06267
10/16/2019 17:35	11.3569	6.90568
10/16/2019 17:35	11.1993	7.03836
10/16/2019 17:36	11.1567	7.036
10/16/2019 17:36	11.3995	6.86076
10/16/2019 17:37	11.4867	6.75933
10/16/2019 17:37	11.3129	6.997
10/16/2019 17:38	11.1777	7.02976
10/16/2019 17:38	11.2919	6.98066
10/16/2019 17:39	11.3325	6.8906
10/16/2019 17:39	11.344	6.92841
Run 6		
10/16/2019 17:40	11.3082	6.9382
10/16/2019 17:40	11.3751	6.91673
10/16/2019 17:41	11.4549	6.85839
10/16/2019 17:41	11.4258	6.87473
10/16/2019 17:42	11.367	6.90654
10/16/2019 17:42	11.4225	6.82658
10/16/2019 17:43	11.0546	7.2046
10/16/2019 17:43	10.9322	7.20239
10/16/2019 17:44	10.805	7.37217
10/16/2019 17:44	10.7144	7.3627
10/16/2019 17:45	10.8476	7.29166
10/16/2019 17:45	10.9829	7.1866
10/16/2019 17:46	11.0972	7.03678
10/16/2019 17:46	11.1844	7.02794
10/16/2019 17:47	11.2507	7.01571
10/16/2019 17:47	11.1702	7.01216
10/16/2019 17:48	11.2324	6.94759
10/16/2019 17:48	11.4373	6.83953
10/16/2019 17:49	11.3765	6.90512

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 17:49	11.1208	7.04468
10/16/2019 17:50	11.25	6.91025
10/16/2019 17:50	11.2947	6.91333
10/16/2019 17:51	11.3224	6.93259
10/16/2019 17:51	11.1851	7.04168
10/16/2019 17:52	11.273	6.93141
10/16/2019 17:52	11.2378	6.97711
10/16/2019 17:53	11.2216	7.03939
10/16/2019 17:53	11.0086	7.17476
10/16/2019 17:54	11.3772	6.79051
10/16/2019 17:54	11.58	6.72358
10/16/2019 17:55	11.1222	7.16032
10/16/2019 17:55	11.0627	7.11303
10/16/2019 17:56	11.1851	7.04744
10/16/2019 17:56	11.1871	7.04436
10/16/2019 17:57	11.3717	6.93891
10/16/2019 17:57	11.0992	7.10711
10/16/2019 17:58	11.0694	7.13593
10/16/2019 17:58	11.1804	7.03102
10/16/2019 17:59	11.041	7.16687
10/16/2019 17:59	11.0728	7.14042
10/16/2019 18:00	11.1547	7.02044
10/16/2019 18:00	11.0742	7.14121
10/16/2019 18:01	10.9268	7.14358
10/16/2019 18:01	11.1181	7.00632
10/16/2019 18:02	11.0979	7.04602
10/16/2019 18:02	11.1749	7.05281
10/16/2019 18:03	11.1817	6.9869
10/16/2019 18:03	11.296	6.99613
10/16/2019 18:04	11.181	7.01082
10/16/2019 18:04	11.2088	7.01966
10/16/2019 18:05	11.1026	7.10846
10/16/2019 18:05	11.0735	7.12732
10/16/2019 18:06	11.1296	7.08754
10/16/2019 18:06	11.0268	7.18889
10/16/2019 18:07	10.9822	7.15566
10/16/2019 18:07	11.2338	6.9779
10/16/2019 18:08	11.2013	7.10333
10/16/2019 18:08	10.9694	7.20136
10/16/2019 18:09	11.0377	7.15092
10/16/2019 18:09	11.1912	7.06331
10/16/2019 18:10	11.108	7.13742
10/16/2019 18:10	10.9863	7.2046
10/16/2019 18:11	11.1628	7.0982
10/16/2019 18:11	11.0032	7.19749
10/16/2019 18:12	11.0552	7.14824

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 18:12	11.0302	7.14406
10/16/2019 18:13	11.2135	7.06804
10/16/2019 18:13	10.968	7.23491
10/16/2019 18:14	11.058	7.15037
10/16/2019 18:14	11.0323	7.16955
10/16/2019 18:15	11.1662	7.04436
10/16/2019 18:15	11.2838	7.01666
10/16/2019 18:16	11.1655	7.05912
10/16/2019 18:16	11.1513	7.08983
10/16/2019 18:17	11.0816	7.07128
10/16/2019 18:17	11.2378	6.94522
10/16/2019 18:18	11.1797	7.04555
10/16/2019 18:18	11.1946	7.01303
10/16/2019 18:19	11.3914	6.86163
10/16/2019 18:19	11.4434	6.84892
10/16/2019 18:20	11.154	7.02936
10/16/2019 18:20	11.1804	7.01681
10/16/2019 18:21	11.298	6.93599
10/16/2019 18:21	11.3406	6.87726
10/16/2019 18:22	11.4346	6.9183
10/16/2019 18:22	11.0816	7.12282
10/16/2019 18:23	11.2886	6.95604
10/16/2019 18:23	11.2906	6.9603
10/16/2019 18:24	11.3914	6.94191
10/16/2019 18:24	11.2919	6.93401
10/16/2019 18:25	11.3001	6.96132
10/16/2019 18:25	11.2473	7.02613
10/16/2019 18:26	11.3034	6.95051
10/16/2019 18:26	11.2595	7.05731
10/16/2019 18:27	11.3413	6.89644
10/16/2019 18:27	11.2006	7.05723
10/16/2019 18:28	11.2351	7.01808
10/16/2019 18:28	11.2784	6.97553
10/16/2019 18:29	11.2	7.03971
10/16/2019 18:29	11.1986	7.05581
10/16/2019 18:30	11.2838	6.97601
10/16/2019 18:30	11.2541	6.99866
10/16/2019 18:31	11.2331	7.02218
10/16/2019 18:31	11.3278	6.94972
10/16/2019 18:32	11.2324	7.01745
10/16/2019 18:32	11.3873	6.89707
10/16/2019 18:33	11.25	6.9693
10/16/2019 18:33	11.2318	6.99195
10/16/2019 18:34	11.2953	6.92833
10/16/2019 18:34	11.3623	6.92154
10/16/2019 18:35	11.3251	6.97553

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 18:35	11.3447	6.90489
10/16/2019 18:36	11.3589	6.9333
10/16/2019 18:36	11.2608	6.99258
10/16/2019 18:37	11.2649	6.98216
10/16/2019 18:37	11.3914	6.91112
10/16/2019 18:38	11.3616	6.88365
10/16/2019 18:38	11.392	6.92825
10/16/2019 18:39	11.3197	6.97009
10/16/2019 18:39	11.3548	6.9704
10/16/2019 18:40	11.2764	7.00418
10/16/2019 18:40	11.3799	6.93701
10/16/2019 18:41	11.461	6.81269
10/16/2019 18:41	11.4373	6.88018
10/16/2019 18:42	11.5009	6.78854
10/16/2019 18:42	11.4184	6.87608
10/16/2019 18:43	11.459	6.83906
10/16/2019 18:43	11.3278	6.94333
10/16/2019 18:44	11.3663	6.90544
10/16/2019 18:44	11.4096	6.86045
10/16/2019 18:45	11.4488	6.89084
10/16/2019 18:45	11.1898	7.03071
10/16/2019 18:46	11.3102	6.95698
10/16/2019 18:46	11.3264	6.89881
10/16/2019 18:47	11.4482	6.78364
10/16/2019 18:47	11.3413	6.8385
10/16/2019 18:48	11.5239	6.716
10/16/2019 18:48	11.5496	6.67148
10/16/2019 18:49	11.6017	6.64046
10/16/2019 18:49	11.3866	6.81151
10/16/2019 18:50	11.5794	6.65885
10/16/2019 18:50	11.4942	6.80251
10/16/2019 18:51	11.1722	7.00837
10/16/2019 18:51	11.1919	7.00853
10/16/2019 18:52	11.1986	6.95548
10/16/2019 18:52	11.2649	6.91167
10/16/2019 18:53	11.0106	7.11485
10/16/2019 18:53	11.0864	7.07791
10/16/2019 18:54	11.0113	7.08422
10/16/2019 18:54	11.1175	7.04484
10/16/2019 18:55	11.0911	7.12148
10/16/2019 18:55	10.9443	7.20594
10/16/2019 18:56	11.2994	6.87971
10/16/2019 18:56	11.7457	6.56981
10/16/2019 18:57	11.269	7.02044
10/16/2019 18:57	11.3346	6.89462
10/16/2019 18:58	11.1952	7.02881

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 18:58	11.0728	7.08391
10/16/2019 18:59	11.1973	7.03631
10/16/2019 18:59	11.1303	7.05431
10/16/2019 19:00	11.252	6.94569
10/16/2019 19:00	11.1486	7.05131
10/16/2019 19:01	11.1256	7.03315
10/16/2019 19:01	11.269	6.92375
10/16/2019 19:02	11.2757	6.9438
10/16/2019 19:02	11.1722	7.018
10/16/2019 19:03	11.1344	7.06481
10/16/2019 19:03	11.1871	6.97206
10/16/2019 19:04	11.3244	6.85587
10/16/2019 19:04	11.3731	6.83006
10/16/2019 19:05	12.0602	6.26939
10/16/2019 19:05	12.5566	5.95263
10/16/2019 19:06	11.7836	6.63241
10/16/2019 19:06	11.2737	6.99219
10/16/2019 19:07	11.363	6.87876
10/16/2019 19:07	11.4238	6.80953
10/16/2019 19:08	11.4475	6.80314
10/16/2019 19:08	11.5496	6.77094
10/16/2019 19:09	11.4874	6.78593
10/16/2019 19:09	11.4678	6.77449
10/16/2019 19:10	11.3704	6.88902
10/16/2019 19:10	11.5259	6.76959
10/16/2019 19:11	11.4698	6.79493
10/16/2019 19:11	11.3711	6.9022
10/16/2019 19:12	11.6321	6.70384
10/16/2019 19:12	11.3772	6.92059
10/16/2019 19:13	11.461	6.79667
10/16/2019 19:13	11.4083	6.83148
10/16/2019 19:14	11.4793	6.76857
10/16/2019 19:14	11.4448	6.83156
10/16/2019 19:15	11.6565	6.60367
10/16/2019 19:15	11.5564	6.7347
10/16/2019 19:16	11.5665	6.68253
10/16/2019 19:16	11.599	6.66288
10/16/2019 19:17	11.5293	6.69926
10/16/2019 19:17	11.6416	6.62775
10/16/2019 19:18	11.4928	6.77409
10/16/2019 19:18	11.532	6.71016
10/16/2019 19:19	11.5611	6.683
10/16/2019 19:19	11.6551	6.59515
10/16/2019 19:20	11.6997	6.59997
10/16/2019 19:20	11.693	6.54511
10/16/2019 19:21	11.7491	6.55639

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 19:21	11.415	6.81987
10/16/2019 19:22	11.2656	6.93614
10/16/2019 19:22	11.2304	6.98848
10/16/2019 19:23	11.2554	6.97024
10/16/2019 19:23	11.3433	6.91436
10/16/2019 19:24	11.2487	6.99266
10/16/2019 19:24	11.2615	6.92959
10/16/2019 19:25	11.3569	6.92857
10/16/2019 19:25	11.131	7.10719
10/16/2019 19:26	11.1215	7.08935
10/16/2019 19:26	11.2852	6.95264
10/16/2019 19:27	11.2331	7.05391
10/16/2019 19:27	11.4035	6.83827
10/16/2019 19:28	11.1391	7.13427
10/16/2019 19:28	11.0032	7.23814
10/16/2019 19:29	11.1168	7.09141
10/16/2019 19:29	11.2351	6.96851
10/16/2019 19:30	11.1851	7.03039
10/16/2019 19:30	11.3772	6.85318
10/16/2019 19:31	11.3346	6.8756
10/16/2019 19:31	11.3237	6.86755
10/16/2019 19:32	11.2034	6.97979
10/16/2019 19:32	11.1837	7.01184
10/16/2019 19:33	11.3231	6.89912
10/16/2019 19:33	11.4326	6.77686
10/16/2019 19:34	11.363	6.89297
10/16/2019 19:34	11.3616	6.89139
10/16/2019 19:35	11.4103	6.85508
10/16/2019 19:35	11.3447	6.82319
10/16/2019 19:36	11.4772	6.78656
10/16/2019 19:36	11.3116	6.89581
10/16/2019 19:37	11.4123	6.80267
10/16/2019 19:37	11.3075	6.92849
10/16/2019 19:38	11.4299	6.8048
10/16/2019 19:38	11.4698	6.80985
10/16/2019 19:39	11.482	6.76959
10/16/2019 19:39	11.1939	7.0547
10/16/2019 19:40	11.3542	6.88271
10/16/2019 19:40	11.3258	6.91767
10/16/2019 19:41	11.3596	6.87315
10/16/2019 19:41	11.3548	6.91862
10/16/2019 19:42	11.4231	6.80953
10/16/2019 19:42	11.4685	6.77322
10/16/2019 19:43	11.4083	6.87458
10/16/2019 19:43	11.3792	6.88523
10/16/2019 19:44	11.4576	6.8419

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 19:44	11.2757	6.92036
10/16/2019 19:45	11.3501	6.8921
10/16/2019 19:45	11.4029	6.80701
10/16/2019 19:46	11.4739	6.80504
10/16/2019 19:46	11.3001	6.90504
10/16/2019 19:47	11.3569	6.88081
10/16/2019 19:47	11.4624	6.72444
10/16/2019 19:48	11.507	6.69027
10/16/2019 19:48	11.5057	6.74599
10/16/2019 19:49	11.5449	6.73455
10/16/2019 19:49	11.4394	6.85279
10/16/2019 19:50	11.48	6.78041
10/16/2019 19:50	11.484	6.76115
10/16/2019 19:51	11.4563	6.78767
10/16/2019 19:51	11.4644	6.72823
10/16/2019 19:52	11.5009	6.67764
10/16/2019 19:52	11.6538	6.62215
10/16/2019 19:53	11.3575	6.87789
10/16/2019 19:53	11.5036	6.6894
10/16/2019 19:54	11.3548	6.85713
10/16/2019 19:54	11.3433	6.8696
10/16/2019 19:55	11.4008	6.84616
10/16/2019 19:55	11.4813	6.75396
10/16/2019 19:56	11.4049	6.81601
10/16/2019 19:56	11.2622	6.94001
10/16/2019 19:57	11.3156	6.89873
10/16/2019 19:57	11.2602	6.89699
10/16/2019 19:58	11.4664	6.78933
10/16/2019 19:58	11.3927	6.82477
10/16/2019 19:59	11.1465	7.03592
10/16/2019 19:59	11.3231	6.90773
10/16/2019 20:00	11.1648	7.00553
10/16/2019 20:00	11.0992	7.05383
10/16/2019 20:01	11.3075	6.86984
10/16/2019 20:01	11.9628	6.31754
10/16/2019 20:02	12.5336	5.90045
10/16/2019 20:02	12.608	5.97497
10/16/2019 20:03	11.908	6.41455
10/16/2019 20:03	11.7424	6.52656
10/16/2019 20:04	11.764	6.52095
10/16/2019 20:04	11.8499	6.46049
10/16/2019 20:05	11.6605	6.60439
10/16/2019 20:05	11.739	6.55118
10/16/2019 20:06	11.8059	6.52387
10/16/2019 20:06	11.7329	6.57455
10/16/2019 20:07	11.7275	6.55568

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 20:07	11.9344	6.39442
10/16/2019 20:08	11.8641	6.46396
10/16/2019 20:08	11.7396	6.52458
10/16/2019 20:09	11.8282	6.48922
10/16/2019 20:09	11.9107	6.47328
10/16/2019 20:10	11.858	6.4949
10/16/2019 20:10	11.7241	6.57155
10/16/2019 20:11	11.7755	6.56026
10/16/2019 20:11	11.8526	6.48535
10/16/2019 20:12	11.9209	6.44652
10/16/2019 20:12	11.8526	6.5335
10/16/2019 20:13	11.7836	6.51693
10/16/2019 20:13	11.9709	6.41921
10/16/2019 20:14	11.8614	6.47833
10/16/2019 20:14	11.7092	6.57999
10/16/2019 20:15	11.8154	6.4743
10/16/2019 20:15	12.0575	6.30712
10/16/2019 20:16	11.8019	6.47754
10/16/2019 20:16	11.5787	6.63399
10/16/2019 20:17	11.7254	6.5069
10/16/2019 20:17	11.8032	6.48243
10/16/2019 20:18	11.7275	6.5429
10/16/2019 20:18	11.5314	6.6594
10/16/2019 20:19	11.4265	6.75428
10/16/2019 20:19	11.3853	6.78972
10/16/2019 20:20	11.3386	6.79817
10/16/2019 20:20	11.2919	6.88073
10/16/2019 20:21	11.1486	7.00497
10/16/2019 20:21	11.2365	6.88792
10/16/2019 20:22	11.0539	7.05336
10/16/2019 20:22	11.0809	7.00663
10/16/2019 20:23	11.1594	6.89928
10/16/2019 20:23	11.1452	6.92936
10/16/2019 20:24	11.1378	6.98074
10/16/2019 20:24	11.1925	6.91902
10/16/2019 20:25	11.2777	6.79091
10/16/2019 20:25	11.2358	6.93172
10/16/2019 20:26	11.3521	6.80709
10/16/2019 20:26	11.2737	6.93449
10/16/2019 20:27	11.3433	6.82351
10/16/2019 20:27	11.2629	6.8524
10/16/2019 20:28	11.129	6.94696
10/16/2019 20:28	11.3521	6.73171
10/16/2019 20:29	11.229	6.86218
10/16/2019 20:29	11.3203	6.83021
10/16/2019 20:30	11.1648	6.92596

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 20:30	11.2879	6.80788
10/16/2019 20:31	11.3582	6.72452
10/16/2019 20:31	11.2372	6.78988
10/16/2019 20:32	11.3596	6.69027
10/16/2019 20:32	11.2676	6.76202
10/16/2019 20:33	11.3677	6.70976
10/16/2019 20:33	11.294	6.73897
10/16/2019 20:34	11.2886	6.81348
10/16/2019 20:34	11.3014	6.72271
10/16/2019 20:35	11.3657	6.77899
10/16/2019 20:35	11.1553	6.87939
10/16/2019 20:36	11.3799	6.73786
10/16/2019 20:36	11.2811	6.82066
10/16/2019 20:37	11.4434	6.69674
10/16/2019 20:37	11.3974	6.76707
10/16/2019 20:38	11.3413	6.73968
10/16/2019 20:38	11.3136	6.81995
10/16/2019 20:39	11.296	6.81814
10/16/2019 20:39	11.2047	6.87821
10/16/2019 20:40	11.1925	6.83669
10/16/2019 20:40	11.3738	6.67037
10/16/2019 20:41	11.3244	6.79099
10/16/2019 20:41	11.1547	6.84687
10/16/2019 20:42	11.1952	6.78499
10/16/2019 20:42	11.4827	6.61717
10/16/2019 20:43	11.3758	6.728
10/16/2019 20:43	11.3217	6.70597
10/16/2019 20:44	11.3873	6.70976
10/16/2019 20:44	11.273	6.77441
10/16/2019 20:45	11.3001	6.75325
10/16/2019 20:45	11.3298	6.73936
10/16/2019 20:46	11.2757	6.78775
10/16/2019 20:46	11.2676	6.79485
10/16/2019 20:47	11.1492	6.90339
10/16/2019 20:47	11.1729	6.88255
10/16/2019 20:48	11.2257	6.85145
10/16/2019 20:48	11.2507	6.90583
10/16/2019 20:49	11.0126	7.03789
10/16/2019 20:49	11.1526	6.89873
10/16/2019 20:50	11.4015	6.72886
10/16/2019 20:50	11.1655	6.95959
10/16/2019 20:51	10.9687	7.10404
10/16/2019 20:51	10.7502	7.23475
10/16/2019 20:52	11.0593	6.96827
10/16/2019 20:52	10.9376	7.18273
10/16/2019 20:53	10.5805	7.36704

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 20:53	10.8037	7.22283
10/16/2019 20:54	10.8077	7.20404
10/16/2019 20:54	10.9328	7.05352
10/16/2019 20:55	10.7881	7.18321
10/16/2019 20:55	10.9721	7.05573
10/16/2019 20:56	10.8943	7.11903
10/16/2019 20:56	11.0938	6.98003
10/16/2019 20:57	10.8003	7.22354
10/16/2019 20:57	10.9612	7.1034
10/16/2019 20:58	10.8943	7.21107
10/16/2019 20:58	10.7895	7.24304
10/16/2019 20:59	10.7983	7.27351
10/16/2019 20:59	10.7313	7.2574
10/16/2019 21:00	10.7726	7.2147
10/16/2019 21:00	10.7401	7.22244
10/16/2019 21:01	10.7076	7.32813
10/16/2019 21:01	10.6846	7.29766
10/16/2019 21:02	10.713	7.33279
10/16/2019 21:02	10.5433	7.43295
10/16/2019 21:03	10.9024	7.12527
10/16/2019 21:03	10.9071	7.18265
10/16/2019 21:04	10.9626	7.06891
10/16/2019 21:04	11.0836	6.99811
10/16/2019 21:05	10.8476	7.21131
10/16/2019 21:05	10.9085	7.15511
10/16/2019 21:06	10.8395	7.17784
10/16/2019 21:06	11.0174	7.11359
10/16/2019 21:07	10.9437	7.09054
10/16/2019 21:07	11.0059	7.11082
10/16/2019 21:08	10.9842	7.09662
10/16/2019 21:08	10.8605	7.21525
10/16/2019 21:09	11.0214	7.04634
10/16/2019 21:09	11.0539	7.04989
10/16/2019 21:10	11.0208	7.03063
10/16/2019 21:10	11.0383	7.03213
10/16/2019 21:11	11.2074	6.91333
10/16/2019 21:11	11.0809	6.92557
10/16/2019 21:12	11.1371	6.95477
10/16/2019 21:12	11.2453	6.7482
10/16/2019 21:13	11.1668	6.87686
10/16/2019 21:13	11.1425	6.8835
10/16/2019 21:14	11.0627	7.03205
10/16/2019 21:14	10.9836	7.08683
10/16/2019 21:15	11.0627	7.00308
10/16/2019 21:15	11.0275	7.07736
10/16/2019 21:16	11.0661	6.98145

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 21:16	11.1026	7.00995
10/16/2019 21:17	11.2182	6.8726
10/16/2019 21:17	11.1222	7.0487
10/16/2019 21:18	11.1114	6.95359
10/16/2019 21:18	11.2006	6.96164
10/16/2019 21:19	11.1411	6.93543
10/16/2019 21:19	11.156	7.01721
10/16/2019 21:20	11.0465	7.04847
10/16/2019 21:20	11.0593	7.03505
10/16/2019 21:21	11.1053	6.93559
10/16/2019 21:21	11.2054	6.81987
10/16/2019 21:22	10.9443	7.01405
10/16/2019 21:22	11.2162	6.76533
10/16/2019 21:23	11.0965	6.93283
10/16/2019 21:23	11.1783	6.79469
10/16/2019 21:24	11.2094	6.80732
10/16/2019 21:24	11.11	6.90812
10/16/2019 21:25	11.1959	6.82311
10/16/2019 21:25	11.0661	6.98713
10/16/2019 21:26	10.945	7.02384
10/16/2019 21:26	11.0248	6.95619
10/16/2019 21:27	11.1547	6.86368
10/16/2019 21:27	11.1959	6.86518
10/16/2019 21:28	10.9849	6.95406
10/16/2019 21:28	11.1695	6.85437
10/16/2019 21:29	11.0262	7.01981
10/16/2019 21:29	11.0417	7.05802
10/16/2019 21:30	11.133	6.93899
10/16/2019 21:30	11.1168	6.97451
10/16/2019 21:31	11.3231	6.78743
10/16/2019 21:31	11.246	6.8475
10/16/2019 21:32	11.1925	6.8981
10/16/2019 21:32	11.2155	6.85342
10/16/2019 21:33	11.528	6.60746
10/16/2019 21:33	11.9033	6.3439
10/16/2019 21:34	11.9865	6.32275
10/16/2019 21:34	11.8769	6.3578
10/16/2019 21:35	12.4004	5.931
10/16/2019 21:35	12.7933	5.69286
10/16/2019 21:36	12.2043	6.23095
10/16/2019 21:36	11.9053	6.39008
10/16/2019 21:37	11.7586	6.4608
10/16/2019 21:37	11.6362	6.59294
10/16/2019 21:38	11.4455	6.68821
10/16/2019 21:38	11.5212	6.61346
10/16/2019 21:39	11.5848	6.58165

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 21:39	11.3548	6.72736
10/16/2019 21:40	11.4779	6.66714
10/16/2019 21:40	11.6565	6.55032
10/16/2019 21:41	11.5449	6.62278
10/16/2019 21:41	11.5516	6.61867
10/16/2019 21:42	11.7268	6.55339
10/16/2019 21:42	11.6193	6.57439
10/16/2019 21:43	11.5368	6.65214
10/16/2019 21:43	11.4556	6.72705
10/16/2019 21:44	11.5543	6.60194
10/16/2019 21:44	11.6923	6.50311
10/16/2019 21:45	11.5888	6.62175
10/16/2019 21:45	11.599	6.54416
10/16/2019 21:46	11.6937	6.57865
10/16/2019 21:46	11.5557	6.60146
10/16/2019 21:47	11.5496	6.65388
10/16/2019 21:47	11.6051	6.57321
10/16/2019 21:48	11.6565	6.53879
10/16/2019 21:48	11.7518	6.46767
10/16/2019 21:49	11.5029	6.68679
10/16/2019 21:49	11.3711	6.76288
10/16/2019 21:50	11.342	6.76809
10/16/2019 21:50	11.2446	6.89565
10/16/2019 21:51	11.2974	6.84095
10/16/2019 21:51	11.2182	6.87529
10/16/2019 21:52	11.4367	6.71947
10/16/2019 21:52	11.1486	6.98398
10/16/2019 21:53	11.227	6.87158
10/16/2019 21:53	11.129	6.90883
10/16/2019 21:54	11.3149	6.76588
10/16/2019 21:54	11.0891	6.90323
10/16/2019 21:55	11.1675	6.87213
10/16/2019 21:55	11.2399	6.78278
10/16/2019 21:56	11.2399	6.80725
10/16/2019 21:56	11.3623	6.7512
10/16/2019 21:57	11.0749	7.04855
10/16/2019 21:57	11.0505	7.11264
10/16/2019 21:58	10.9856	7.08849
10/16/2019 21:58	10.8909	7.18534
End Run 6	**11.310**	**6.876**
10/16/2019 21:59	11.0431	7.09377
10/16/2019 21:59	11.0465	7.03536
10/16/2019 22:00	20.2723	0.02739
10/16/2019 22:00	20.3197	6.31E-04
10/16/2019 22:01	20.3305	-0.01105

Analyzer Data - 10/16/2019

TIME	O2	CO2
10/16/2019 22:01	20.3325	-0.01618
10/16/2019 22:02	20.3359	-0.01847
10/16/2019 22:02	20.34	-0.02218
10/16/2019 22:03	20.3427	-0.02392
10/16/2019 22:03	20.342	-0.02573
10/16/2019 22:04	20.3454	-0.02715
10/16/2019 22:04	20.3474	-0.02905
10/16/2019 22:05	20.3454	-0.03031
10/16/2019 22:05	20.3474	-0.02976
10/16/2019 22:06	17.1012	0.334363
10/16/2019 22:06	20.3379	0.040256
10/16/2019 22:07	9.73446	10.1176
10/16/2019 22:07	9.78518	10.1926
10/16/2019 22:08	9.76286	10.2099
10/16/2019 22:08	9.71417	10.2297
10/16/2019 22:09	19.9376	1.26839
10/16/2019 22:09	0.081751	-0.03986
10/16/2019 22:10	0.05369	-0.06023
10/16/2019 22:10	0.039084	-0.06725
10/16/2019 22:11	19.4121	-0.0195

Alaska Source Testing, LLC

NRC

2019

PFAS Testing - 10/13/2019 - 10/16/2019

CO2 System Bias Correction

CO2		RANGE	9.998	Upscale gas	9.998				
Run No.			**Analyzer Calibration Response**	**System Calibration Response**	**System Cal. Bias (% span)**	**Drift (% Span)**	**Gas Concentration %**	**Co**	**Cm**	**Gas Concentration Corrected**
Initial		Zero	-0.049	-0.05	0.0%					
		Upscale	9.959	9.95	-0.1%					
1	Start	Zero	-0.049	-0.05	0.0%	0.2%	6.18	-0.043	10.1	6.151
		Upscale	9.959	9.95	-0.1%	2.4%				
	Finish	Zero	-0.049	-0.03	0.2%					
		Upscale	9.959	10.19	2.3%					
2	Start	Zero	-0.049	-0.04	0.1%	0.0%	6.89	-0.037	10.4	6.655
		Upscale	9.959	10.08	1.3%	5.6%				
	Finish	Zero	-0.049	-0.04	0.1%					
		Upscale	9.959	10.65	6.9%					
3	Start	Zero	-0.049	-0.04	0.1%	0.0%	6.79	-0.037	10.4	6.559
		Upscale	9.959	10.08	1.3%	5.6%				
	Finish	Zero	-0.049	-0.04	0.1%					
		Upscale	9.959	10.65	6.9%					
4	Start	Zero	-0.049	-0.03	0.2%	-0.4%	6.32	-0.051	10.4	6.092
		Upscale	9.959	10.55	5.9%	-2.8%				
	Finish	Zero	-0.049	-0.07	-0.2%					
		Upscale	9.959	10.27	3.1%					
5	Start	Zero	-0.049	-0.05	0.0%	0.1%	6.87	-0.046	10.3	6.680
		Upscale	9.959	10.39	4.3%	-1.8%				
	Finish	Zero	-0.049	-0.04	0.1%					
		Upscale	9.959	10.21	2.5%					
6	Start	Zero	-0.049	-0.05	0.0%	0.1%	6.88	-0.046	10.3	6.688
		Upscale	9.959	10.39	4.3%	-1.8%				
	Finish	Zero	-0.049	-0.04	0.1%					
		Upscale	9.959	10.21	2.5%					

PFAS Testing - 10/13/2019 - 10/16/2019

O_2 System Bias Correction

O2 SPAN 20.9 Upscale gas 10.02

Run No.			Analyzer Calibration Response	System Calibration Response	System Cal. Bias (% span)	Drift (% Span)	Gas Concentration %	Co	Cm	Gas Concentration Corrected
Initial		Zero	0.013	0.029	0.1%					
		Upscale	10.125	10.106	-0.1%					
1	Start	Zero	0.013	0.029	0.1%	0.1%	12.4	0.0352	10.1	12.39
		Upscale	10.125	10.106	-0.1%	-0.4%				
	Finish	Zero	0.013	0.041	0.1%					
		Upscale	10.125	10.025	-0.5%					
2	Start	Zero	0.013	0.037	0.1%	0.0%	12.0	0.0318	10.1	11.88
		Upscale	10.125	10.313	0.9%	-1.9%				
	Finish	Zero	0.013	0.027	0.1%					
		Upscale	10.125	9.920	-1.0%					
3	Start	Zero	0.013	0.037	0.1%	0.0%	12.0	0.0318	10.1	11.91
		Upscale	10.125	10.313	0.9%	-1.9%				
	Finish	Zero	0.013	0.027	0.1%					
		Upscale	10.125	9.920	-1.0%					
4	Start	Zero	0.013	0.045	0.2%	0.0%	12.2	0.0495	9.9	12.41
		Upscale	10.125	9.853	-1.3%	0.0%				
	Finish	Zero	0.013	0.054	0.2%					
		Upscale	10.125	9.864	-1.2%					
5	Start	Zero	0.013	0.039	0.1%	0.1%	11.4	0.0463	9.8	11.70
		Upscale	10.125	9.798	-1.6%	-0.1%				
	Finish	Zero	0.013	0.054	0.2%					
		Upscale	10.125	9.785	-1.6%					
6	Start	Zero	0.013	0.039	0.1%	0.1%	11.3	0.0463	9.8	11.58
		Upscale	10.125	9.798	-1.6%	-0.1%				
	Finish	Zero	0.013	0.054	0.2%					
		Upscale	10.125	9.785	-1.6%					

Appendix C
Field Data Sheets & Operations Data

Alaska Source Testing | Field Data Sheet | Sheet 1 of 1

Company: NRC	Location: North Pole/moose crk	Test Date: 10/13/19	Run Number: 1		
Test Personnel: Chase A/Bill H		Plant Assistance: Matt C.			
Unit ID:	Equip. Type: Dirt Burner	Control Equip: Baghouse/scrubber			
Rate:	Fuel: Diesel/U.S. oil	O2: 11.6	CO2: 6.71		
Baro: 30.18	Nozzle Diam. 1: .390 2: .390 3: .390	Stack Pres.: -.18	Kf: 11.2		
Pitot leak	pre Ø post Ø	Sample system leak check (CFM)	pre 0	Vacuum -15	
Pressure:	10 10		post 0	Vacuum -12	

Special Notes and Stack Dimensions/port locations

011 MM5

Points per traverse: 12	Total points: 24	Minutes/point: 10	Total Run Length	240 min [redacted] min
Pitot/Probe ID 4-4	Meter Box ID m-2	Bell/filter number:		
Initial Meter Reading: 499.640	Adjustments:	**Final Meter Reading:** 619.510		
Start Run: 13:05	End Run: 17:40			

3 1 2

Point	Timer	Meter Reading	Pitot Reading	Delta H	Stack Temp.	Dryer Outlet	DGM In	DGM out	Vac.	Filter Box/Probe
10 1	[redacted]	505.03	~~.07~~	~~.8~~ ~~.85~~	150	29	48	48	-5	172/180
20 2		510.3	.07	.8	145	36	53	50	-6	170/170
30 3		515.8	.08	.9	133	38	54	54	-6	165/170
40 4		521.2	.08	.9	145	44	55	51	-8	169/170
50 5		526.9	.08	.9	148	50	55	51	✓	162/170
60 6		533.1	.1	1.2	147	56	56	52	-10	173/171
70 7		538.7	.08	~~1.0~~ .9	147	54	56	52	-7	171/169
80 8		544.2	.08	.9	143	44	57	53	✓	169/171
90 9		549.0	.06	.65	142	36	58	54	-5	172/173
100 10		553.7	.06	.65	143	34	59	55	✓	170/156
110 11		558.2	.06	.65	132	33	58	55	✓	170/182
120 12		563.099	.06	.65	134	33	58	57	✓	168/182
		leak check ✓								
1	10	569.4	.06	.65	147	30	57	57	-5	170/183
2	20	572.6	.06	.65	148	33	58	57	✓	170/172
3	30	577.7	.07	.86	148	31	57	57	-7	170/171
4	40	582.8	.07	.76	✓	30	58	56	-7	168/167
5	50	588.0	.07	.76	149	34	58	56	-7	170/170
6	60	594.1	.09	1.0	149	41	59	56	-9	174/172
7	70	599.8	.09	1.0	158	48	60	✓	-9	170/166
8	80	604.5	.07	.76	149	49	✓	57	-7	169/172
9	90	609.2	.05	.53	141	51	60	57	-5	176/177
10	100	613.1	.04	.42	140	46	60	58	-5	168/162
11	110	616.3	.03	.34	135	46	58	57	-4	169/176
12	120	619.510	.03	.34	140	44	57	✓	✓	
		✓ leak check								

.067

Alaska Source Testing | Field Data Sheet | Sheet 3 of

Company: NRC	Location: north pole		Test Date: 10/14/10	Run Number: 2 3	
Test Personnel:			Plant Assistance:		
Unit ID:	Equip. Type:		Control Equip:		
Rate:	Fuel:		O2:	CO2:	
Baro: 30.01	Nozzle Diam. 1: .392: .39 3: .39		Stack Pres. -.18	Kf:	
Pitot leak	pre ○ post ○	Sample system leak check	pre ○	Vacuum 10	
Pressure:	10" 10"	(CFM)	post ○	Vacuum 15	

Special Notes and Stack Dimensions/port locations

Points per traverse: 12	Total points: 24	Minutes/point: 10	Total Run Length 240
Pitot/Probe ID 4-4	Meter Box ID M-2	Bell/filter number:	
Initial Meter Reading: 767.394	Adjustments:	**Final Meter Reading:** 916.640	
Start Run: 4:30	End Run: 9:07		

Point	Timer	Meter Reading	Pitot Reading	Delta H	Stack Temp.	Dryer Outlet	DGM In	DGM out	Vac.	Filter Box/Probe
1	10	771.8	.08	.90	149	43	46	43	-5	170/170
2	20	777.1	.07	.75	150	50	45	46	-6	170/170
3	30	782.7	.08	.90	147	47	45	45	-6	169/177
4	40	788.5	.08	.9	146	46	46	45	-6	171/173
5	50	794.2	.09	1.0	149	35	47	45	-8	✓
6	60	800.2 .011	1.1	1.2	164	38	49	46	-10	169/171
7	70	806.4 .011	1.1	1.2	170	40	✓	46	✓	169/177
8	80	812.9 .011	1.0	1.1	167	42	51	47	✓	✓
9	90	818.2	.08	.9	146	44	55	49	✓	170/170
10	100	823.9	.06	.65	134	45	56	52	-9	168/164
11	110	829.0	.07	.85	69	46	57	53	-8	170/168
12	120	834.650	.07	.85	75	50	✓	54	-8	169/169
		leak check								
1	10	856.2	.08	.9	146	50	54	54	-9	169/176
2	20	862.4	.08	.9	145	56	54	53	-9	172/179
3	30	867.7	.08	.9	✓	60	52	52	-10	171/171
4	40	872.6	.08	.9	147	50	✓	51	-10	170/181
5	50	878.2	.08	.9	✓	40	55	52	-10	169/168
6	60	884.4	.09	1.0	✓	41	✓	51	✓	
7	70	890.1	.1	1.1	149	41	48	47	-11	169/168
8	80	896.2	.09	1.0	146	42	49	✓	-11	168/171
9	90	902.1	.09	1.0	✓	42	✓	47	-11	169/172
10	100	907.5	.07	.85	146	42	51	48	-11	169/172
11	110	911.7	.05	.53	134	43	52	49	-7	170/170
12	120	916.640	.06	.65	133	42	55	52	-8	170/169

Alaska Source Testing Field Data Sheet

Client/Location: NRC			Test Date: 10/16/19		Run #: 5
Test Personnel: Chase A.			Plant Assistance:		
Unit ID:	Equip. Type: Dirtburner		Control Equip: Bag house/Scrubber		
Rate:	Fuel: Diesel		O2: 11.1	CO2: 7.16	
Baro:	Nozzle Diam 1: .39 2: .393: .390		Stack Press: -.18	Kf: ~~13~~ ~~10~~ 11.2	
Pitot leak	pre 0	post 10	Sample System Leak Check (CFM)	pre 0	Vacuum 7
Pressure	0	9		post 0	Vacuum 18

Special Notes and Stack Dimensions/port locations:

Points/Traverse:	12	Total Points:	24	Minutes/Point:	10	Run Length:	240		
Pitot/Probe ID:	A-4	Meter Box ID:	M-2	Bell/Filter Number:	/				
Initial Meter Reading:	110.888	Adjustments:		**Final Meter Reading:**	262.800				
Run Start Time:	12:00	Run End Time:	4:45	**Meter Volume:**	.				

Point	Timer	Meter Reading	Pitot Reading	Delta H	Stack Temp	Dryer Outlet	DGM In	DGM out	Vac	Filter Box/Probe
1	10	115.9	.1	1.1	145	34	44	43	-7	245/237
2	20	122.4	.1	1.1	145	37	45	45	✓	247/236
3	30	128.8	.12	1.2 ~~1.3~~	148	42	49	46	✓	249/226
4	40	135.2	.12	1.3	144	50	53	48	-8	248/227
5	50	142.2	.14	1.6	145	58	54	55	-10	251/232
6	60	150.3	.16	1.8	148	58	56	52	✓	248/222
7	70	157.1	.1	1.1	146	53	55	59	✓	249/223
8	80	164.5	.14	1.6	146	49	60	55	✓	252/236
9	90	171.5	.12	1.3	✓	54	61	57	✓	250/226
10	100	177.4	.08	.9	147	60	63	59	-8	248/220
11	110	183.5	.09 ~~.8~~	1.0	148	60	64	60	-8	248/220
12	120	189.595	.1	1.1	147	64	66	61	-9	251/222
		Leak Check ✓								
1	10	197.0	.1	1.1	151	38	62	63	-8	249/235
2	20	202.1	.1	1.1	147	42	60	62	✓	249/21
3	30	207.9	.1	1.1	148	43	61	61	✓	248/21
4	40	214.1	.1	1.1	150	44	62	✓	✓	250/208
5	50	221.1	.13	1.4	149	45	62	59	✓	247/200
6	60	229.0	.14	1.6	149	48	✓	61	-10	253/195
7	70	235.9	.15	1.6	✓	52	63	62	-10	249/203
8	80	243.5	.12	1.3	✓	54	61	60	-15	252/203
9	90	249.1	.09 ~~.9~~	1.0	150	55	63	61	-14	248/194
10	100	254.4	.05 ~~.5~~	.58	147	51	64	62	-9	248/206
11	110	258.4	.05 ~~.5~~	.58	137	~~48~~	65	63	-7	249/197
12	120	262.800	.05 ~~.5~~	.58	135	47	67	64	✓	252/193
		AVERAGES			+460= °R		+460= °R			

METHOD 4 - MOISTURE CONTENT
SAMPLE RECOVERY DATA SHEET

Client: NRC

Test Date: 10/15/19

Performed By: Doug Cahill

Alaska Source Testing, LLC

RUN #5 Voided NO Condition "2" (same conditions) A6605-A6611

Run # 0010 MM5-5	Impinger 1	Impinger 2	Impinger 3	Impinger 4	IMP#5	Imp 6
Final Imp. Wt. (g)						
Initial Imp. Wt. (g)	488.0	743.0	746.0	749.0	484.0	823
Hose Catch (g)	-VOID					
Net H2O Gain (g)						
TOTAL						

All tests @ 1 condition (1-6)

-#5

Run # 0010-MM5-6	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp#5	Imp6
Final Imp. Wt. (g)	1,216.0	1016.0	1003.0	830.0	472.0	889
Initial Imp. Wt. (g)	477.0	766.0	749.0	765.0	472.0	848
Hose Catch (g)						
Net H2O Gain (g)						
TOTAL						

Run # Blank train 1	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp#5	Imp6
Final Imp. Wt. (g)	488.0	750.0	746.0	742.0	484.0	823
Initial Imp. Wt. (g)	488.0	750.0	746.0	742.0	484.0	823
Hose Catch (g)						
Net H2O Gain (g)	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
TOTAL						

Run # Blank train 2	Impinger 1	Impinger 2	Impinger 3	Impinger 4	IMP#5	Imp C
Final Imp. Wt. (g)	489.0	750.0	747.0	742.0	484.0	823
Initial Imp. Wt. (g)	489.0	750.0	747.0	742.0	484.0	823
Hose Catch (g)						
Net H2O Gain (g)	ϕ	ϕ	ϕ	ϕ	ϕ	ϕ
TOTAL						

METHOD 4 - MOISTURE CONTENT
SAMPLE RECOVERY DATA SHEET

Client: NRC

Test Date: 10/15/19

Performed By: Doug Cahill

Alaska Source Testing, LLC

Run # 0010MM5-C	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp #5	Imp #6
Final Imp. Wt. (g)	1,220.0	965.0	923.0	691.0	485.0	856.0
Initial Imp. Wt. (g)	488.0	742.0	749.0	749.0	484.0	833
Hose Catch (g)						
Net H2O Gain (g)						
TOTAL						

Run #	Impinger 1	Impinger 2	Impinger 3	Impinger 4	
Final Imp. Wt. (g)					
Initial Imp. Wt. (g)					
Hose Catch (g)					
Net H2O Gain (g)					
TOTAL					

Run #	Impinger 1	Impinger 2	Impinger 3	Impinger 4	
Final Imp. Wt. (g)					
Initial Imp. Wt. (g)					
Hose Catch (g)					
Net H2O Gain (g)					
TOTAL					

Run #	Impinger 1	Impinger 2	Impinger 3	Impinger 4	
Final Imp. Wt. (g)					
Initial Imp. Wt. (g)					
Hose Catch (g)					
Net H2O Gain (g)					
TOTAL					

METHOD 4 - MOISTURE CONTENT
SAMPLE RECOVERY DATA SHEET

Client: NRC

Test Date: 10/13/19 - 10/15/19

Performed By: Doug Cahill / Bill Hudson

Alaska Source Testing, LLC

Run # 0010 MM5-1	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp 5	Imp 6
Final Imp. Wt. (g)	1,232.0	1,004.0	741.0	742.0	484.0	975
Initial Imp. Wt. (g)	487.0	747.0	740.0	743.0	483.0	941
Hose Catch (g)						
Net H2O Gain (g)	745	257	1	-1	1	34
TOTAL						

Run # 0010 MM5-2	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp 5	Imp 6
Final Imp. Wt. (g)	1,229.0	1,018.0	936.0	763.0	472.0	899
Initial Imp. Wt. (g)	476.0	762.0	749.0	763.0	471.0	861
Hose Catch (g)						
Net H2O Gain (g)						
TOTAL						

Run # 0010 MM5-3	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp 5	Imp 6
Final Imp. Wt. (g)	1199.0	948.0	955.0	920.0	484.0	917
Initial Imp. Wt. (g)	487.0	743.0	744.0	751.0	483.0	875.0
Hose Catch (g)						
Net H2O Gain (g)						
TOTAL						

Run # 0010 MM5-4	Impinger 1	Impinger 2	Impinger 3	Impinger 4	Imp 5	Imp 6
Final Imp. Wt. (g)	1197.0	966.0	977.0	705.0	474.0	903
Initial Imp. Wt. (g)	477.0	763.0	750.0	767.0	471.0	855
Hose Catch (g)						
Net H2O Gain (g)	720	203	227	62	3	52
TOTAL						

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PFAS Emissions Testing

Operations Data - 10/13/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	13:00:08	143	21.75	0.19	7.48	2009	157	0.17	16.903
2019_10_13	13:01:08	143	21.91	0.21	7.49	2016	158	0.11	16.91
2019_10_13	13:02:08	143	29.87	0.2	7.48	2023	157	0.11	16.865
2019_10_13	13:03:08	143	22.03	0.18	7.48	2022	159	0.06	16.855
2019_10_13	13:04:08	143	27.99	0.2	7.48	2006	159	0.11	16.948
2019_10_13	13:05:08	143	28.38	0.22	7.48	2014	158	0.11	16.975
2019_10_13	13:06:08	142	29.5	0.23	7.48	2015	159	0.11	16.932
2019_10_13	13:07:08	142	21.82	0.23	7.48	2022	159	0.11	16.889
2019_10_13	13:08:08	143	21.75	0.22	7.48	2030	160	0.17	16.882
2019_10_13	13:09:08	142	29.79	0.19	7.47	2032	158	0.18	16.819
2019_10_13	13:10:08	143	28.49	0.24	7.47	2042	160	0.17	16.828
2019_10_13	13:11:08	143	29.76	0.23	7.48	2053	161	0.17	16.939
2019_10_13	13:12:08	142	29.32	0.25	7.48	2062	160	0.23	16.835
2019_10_13	13:13:08	142	28.39	0.26	7.48	2051	161	0.17	16.837
2019_10_13	13:14:08	142	30.22	0.27	7.48	2035	158	0.23	16.829
2019_10_13	13:15:08	143	28.49	0.28	7.48	2041	157	0.23	16.923
2019_10_13	13:16:08	143	22.96	0.1	7.49	2053	151	0.23	16.591
2019_10_13	13:17:08	143	22.66	0.03	7.49	2149	147	0.17	15.112
2019_10_13	13:18:08	142	21.89	0.37	7.47	2222	151	0.23	14.636
2019_10_13	13:19:08	143	21.86	0.37	7.45	2242	152	0.23	14.359
2019_10_13	13:20:08	142	21.99	0.36	7.4	2118	156	0.23	13.791
2019_10_13	13:21:08	143	28.09	0.34	7.37	2003	156	0.49	14.926
2019_10_13	13:22:08	144	27.93	0.33	7.39	1935	157	0.49	15.541
2019_10_13	13:23:08	143	28.03	0.33	7.41	1896	157	0.54	16.826
2019_10_13	13:24:08	143	22.53	0.33	7.43	1875	157	0.43	16.928
2019_10_13	13:25:08	142	27.39	0.35	7.44	1866	160	0.49	17.001
2019_10_13	13:26:08	142	27.93	0.32	7.45	1862	160	0.54	16.943
2019_10_13	13:27:08	142	22.42	0.28	7.45	1857	160	0.54	17.001
2019_10_13	13:28:08	143	22.7	0.23	7.46	1851	160	0.54	17.064
2019_10_13	13:29:08	143	21.55	0.24	7.46	1843	158	0.54	17.102
2019_10_13	13:30:08	142	22.09	0.19	7.46	1842	163	0.59	17.192
2019_10_13	13:31:08	143	21.91	0.17	7.47	1851	160	0.59	16.851
2019_10_13	13:32:08	142	22.92	0.13	7.47	1866	160	0.69	16.916
2019_10_13	13:33:08	143	22.32	0.11	7.47	1902	160	0.69	16.856
2019_10_13	13:34:08	143	28.56	0.12	7.47	1992	158	0.64	16.683
2019_10_13	13:35:08	143	23.27	0.14	7.46	2084	153	0.59	15.984
2019_10_13	13:36:08	142	21.65	0.18	7.45	2122	151	0.38	15.798
2019_10_13	13:37:08	143	22.41	0.14	7.44	2135	150	4.51	15.402
2019_10_13	13:38:08	143	21.91	0.12	7.44	2172	149	9.45	15.322
2019_10_13	13:39:08	143	23.03	0.13	7.44	2188	147	6.17	15.573
2019_10_13	13:40:08	143	23.09	0.13	7.44	2199	146	4.3	15.575
2019_10_13	13:41:08	142	23.16	0.11	7.44	2198	142	4.09	15.638
2019_10_13	13:42:08	143	23.36	0.14	7.44	2209	142	6.38	15.726
2019_10_13	13:43:08	143	22.69	0.16	7.45	2210	142	16.19	15.658
2019_10_13	13:44:08	142	23.35	0.16	7.45	2222	141	20.19	15.622
2019_10_13	13:45:08	143	23.39	0.18	7.45	2246	142	17.67	15.591
2019_10_13	13:46:08	143	23.03	0.12	7.45	2250	144	15.11	15.494
2019_10_13	13:47:08	143	22.89	0.12	7.45	2264	146	12.69	15.506
2019_10_13	13:48:08	143	23.08	0.08	7.45	2302	152	9.87	15.622
2019_10_13	13:49:08	143	23.32	0.09	7.46	2319	155	7.06	15.739
2019_10_13	13:50:08	143	23.36	0.1	7.44	2246	156	4.46	16.901
2019_10_13	13:51:08	143	22.93	0.16	7.42	2165	155	2.05	16.815
2019_10_13	13:52:08	142	23.12	0.19	7.4	2117	159	0.85	16.781
2019_10_13	13:53:08	143	23.2	0.21	7.4	2094	159	0.49	16.936
2019_10_13	13:54:08	143	23.31	0.23	7.4	2069	162	0.43	16.945
2019_10_13	13:55:08	142	23.26	0.23	7.4	2040	160	0.38	16.961
2019_10_13	13:56:08	143	22.56	0.18	7.4	2039	158	0.38	17.076
2019_10_13	13:57:08	142	22.52	0.13	7.41	2014	160	0.33	17.193
2019_10_13	13:58:08	142	23.12	0.13	7.41	2001	158	0.33	17.168
2019_10_13	13:59:08	142	23.32	0.12	7.42	1998	158	0.28	17.226
2019_10_13	14:00:08	142	23.35	0.14	7.42	1999	158	0.28	17.246
2019_10_13	14:01:08	142	23.16	0.15	7.42	1992	158	0.28	17.329
2019_10_13	14:02:08	143	23.12	0.13	7.41	1976	160	0.28	17.334
2019_10_13	14:03:08	142	23.27	0.11	7.42	1960	156	0.28	17.323
2019_10_13	14:04:08	142	22.26	0.12	7.41	1953	153	0.23	16.815
2019_10_13	14:05:08	142	22.26	0.11	7.4	1942	152	0.28	17.053

PFAS Emissions Testing

Operations Data - 10/13/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	14:06:08	143	22.29	0.13	7.38	1943	157	0.23	17.199
2019_10_13	14:07:08	142	22.3	0.15	7.37	1938	157	0.28	17.341
2019_10_13	14:08:08	142	22.49	0.16	7.36	1944	157	0.28	17.352
2019_10_13	14:09:08	143	22.38	0.17	7.36	1945	158	0.23	17.397
2019_10_13	14:10:08	143	22.76	0.17	7.36	1950	160	0.28	17.462
2019_10_13	14:11:08	137	22.69	0.12	7.35	1961	156	0.17	17.43
2019_10_13	14:12:08	140	22.6	0.1	7.36	1957	152	0.18	17.157
2019_10_13	14:13:08	144	28.18	0.15	7.35	1952	152	0.17	16.916
2019_10_13	14:14:08	143	28.11	0.18	7.34	1951	151	0.17	16.674
2019_10_13	14:15:08	143	27.86	0.2	7.32	1944	155	0.17	17.231
2019_10_13	14:16:08	131	28.16	0.2	7.3	1946	156	0.18	17.46
2019_10_13	14:17:08	127	29.16	0.2	7.3	1951	157	0.17	17.493
2019_10_13	14:18:08	144	29.32	0.22	7.29	1960	158	0.17	17.556
2019_10_13	14:19:08	143	29.12	0.21	7.29	1961	157	0.17	17.503
2019_10_13	14:20:08	144	28.92	0.13	7.29	1960	157	0.18	17.514
2019_10_13	14:21:08	143	29.26	0.17	7.28	1958	158	0.12	17.538
2019_10_13	14:22:08	144	28.99	0.21	7.27	1951	158	0.12	17.626
2019_10_13	14:23:08	144	28.92	0.23	7.27	1945	158	0.12	17.653
2019_10_13	14:24:08	144	28.89	0.26	7.28	1942	160	0.11	17.736
2019_10_13	14:25:08	137	28.92	0.21	7.28	1937	158	0.18	17.65
2019_10_13	14:26:08	138	29.3	0.22	7.28	1942	157	0.11	17.644
2019_10_13	14:27:08	138	29.46	0.2	7.28	1944	157	0.18	17.72
2019_10_13	14:28:08	138	29.66	0.16	7.27	1933	155	0.17	17.756
2019_10_13	14:29:08	138	30.02	0.16	7.27	1936	155	0.18	17.704
2019_10_13	14:30:08	138	29.63	0.05	7.26	1951	153	0.12	17.714
2019_10_13	14:31:08	138	28.83	0.03	7.26	1939	149	0.18	17.289
2019_10_13	14:32:08	137	29.07	0.01	7.26	1942	151	0.17	16.718
2019_10_13	14:33:08	138	29.32	0.08	7.24	1940	151	0.18	17.15
2019_10_13	14:34:08	138	29.32	0.13	7.23	1937	155	0.18	17.494
2019_10_13	14:35:08	137	29.39	0.15	7.22	1925	155	0.12	17.157
2019_10_13	14:36:08	138	29.43	0.15	7.22	1929	155	0.11	17.841
2019_10_13	14:37:08	137	29.43	0.16	7.22	1930	155	0.12	17.776
2019_10_13	14:38:08	138	29.53	0.1	7.21	1929	155	0.12	17.527
2019_10_13	14:39:08	137	29.59	0.13	7.21	1931	155	0.12	17.662
2019_10_13	14:40:08	139	29.59	0.12	7.2	1922	155	0.11	17.675
2019_10_13	14:41:08	137	29.66	0.1	7.2	1913	155	0.11	17.684
2019_10_13	14:42:08	138	29.7	0.13	7.2	1921	156	0.12	17.794
2019_10_13	14:43:08	138	29.66	0.14	7.19	1918	156	0.11	17.79
2019_10_13	14:44:08	139	29.29	0.16	7.19	1919	155	0.11	17.704
2019_10_13	14:45:08	139	29.26	0.13	7.19	1911	155	0.18	17.759
2019_10_13	14:46:08	139	29.15	0.15	7.18	1905	155	0.12	17.738
2019_10_13	14:47:08	140	29.19	0.13	7.18	1906	156	0.18	17.817
2019_10_13	14:48:08	139	28.28	0.13	7.18	1900	157	0.18	17.898
2019_10_13	14:49:08	143	28.59	0.14	7.18	1892	156	0.17	17.943
2019_10_13	14:50:08	143	28.08	0.13	7.17	1883	155	0.23	17.907
2019_10_13	14:51:08	144	27.67	0.16	7.17	1871	156	0.23	17.954
2019_10_13	14:52:08	144	27.14	0.2	7.16	1864	157	0.23	17.954
2019_10_13	14:53:08	143	26.51	0.22	7.16	1858	156	0.23	17.905
2019_10_13	14:54:08	143	26.33	0.23	7.16	1854	157	0.23	17.927
2019_10_13	14:55:08	144	26.35	0.23	7.16	1853	158	0.23	17.972
2019_10_13	14:56:08	143	26.24	0.22	7.15	1881	160	0.23	18.084
2019_10_13	14:57:08	142	26.35	0.17	7.16	1918	160	0.28	18.075
2019_10_13	14:58:08	145	26.26	0.2	7.15	1950	160	0.28	18.048
2019_10_13	14:59:08	144	26.37	0.22	7.15	1973	160	0.28	17.974
2019_10_13	15:00:08	144	26.36	0.17	7.15	1984	160	0.38	16.373
2019_10_13	15:01:08	144	25.83	0.16	7.15	1986	158	0.38	16.474
2019_10_13	15:02:08	145	25.12	0.17	7.15	1990	160	0.38	16.779
2019_10_13	15:03:08	144	26.36	0.15	7.16	1987	160	0.33	16.691
2019_10_13	15:04:08	143	26.33	0.11	7.16	1975	161	0.28	16.764
2019_10_13	15:05:08	144	23.94	0.08	7.17	1978	158	0.28	17.042
2019_10_13	15:06:08	144	26.29	0.06	7.18	1989	159	0.28	17.114
2019_10_13	15:07:08	144	26.19	0.09	7.19	1986	160	0.28	17.163
2019_10_13	15:08:08	143	26.4	0.1	7.2	1967	160	0.28	17.224
2019_10_13	15:09:08	143	26.22	0.14	7.2	1967	158	0.28	17.251
2019_10_13	15:10:08	144	26.4	0.16	7.21	1965	160	0.28	17.41
2019_10_13	15:11:08	144	19.26	0.14	7.23	1947	158	0.28	17.453

PFAS Emissions Testing

Operations Data - 10/13/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	15:12:08	144	26.09	0.1	7.23	1971	158	0.28	17.502
2019_10_13	15:13:08	144	25.5	0.08	7.24	1977	158	0.23	17.541
2019_10_13	15:14:08	143	26.49	0.04	7.25	1974	160	0.28	17.525
2019_10_13	15:15:08	143	26.43	0.12	7.25	1976	160	0.28	17.485
2019_10_13	15:16:08	142	26.49	0.13	7.26	1980	161	0.23	17.568
2019_10_13	15:17:08	143	26.4	0.1	7.27	1989	160	0.23	17.579
2019_10_13	15:18:08	144	26.44	0.1	7.28	1988	160	0.23	17.61
2019_10_13	15:19:08	144	26.44	0.14	7.29	1986	160	0.23	17.731
2019_10_13	15:20:08	143	26.4	0.15	7.3	1989	160	0.28	17.734
2019_10_13	15:21:08	143	26.07	0.14	7.3	1995	160	0.33	17.271
2019_10_13	15:22:08	144	26.48	0.16	7.31	1976	160	0.38	17.188
2019_10_13	15:23:08	140	26.67	0.19	7.31	1990	161	0.33	17.246
2019_10_13	15:24:08	141	26.71	0.16	7.31	1998	158	0.28	17.249
2019_10_13	15:25:08	141	25.74	0.13	7.31	2002	158	0.28	17.224
2019_10_13	15:26:08	143	26.78	0.12	7.31	2013	160	0.28	17.231
2019_10_13	15:27:08	142	26.33	0.14	7.31	2014	158	0.28	17.224
2019_10_13	15:28:08	143	27.1	0.11	7.31	2009	157	0.23	17.195
2019_10_13	15:29:08	142	26.78	0.15	7.31	1998	157	0.28	17.266
2019_10_13	15:30:08	142	26.87	0.15	7.31	2002	156	0.28	17.356
2019_10_13	15:31:08	142	26.67	0.06	7.31	1996	158	0.23	17.298
2019_10_13	15:32:08	142	22.04	0.06	7.31	1996	157	0.28	17.287
2019_10_13	15:33:08	141	26.84	0.09	7.31	1983	156	0.23	17.37
2019_10_13	15:34:08	142	23.91	0.12	7.32	1977	156	0.28	17.213
2019_10_13	15:35:08	143	26.83	0.15	7.32	1974	157	0.28	17.642
2019_10_13	15:36:08	142	24.81	0.17	7.32	1973	157	0.28	17.491
2019_10_13	15:37:08	142	27.07	0.17	7.32	1974	157	0.28	17.55
2019_10_13	15:38:08	141	26.8	0.19	7.32	1968	158	0.33	17.001
2019_10_13	15:39:08	143	21.63	0.21	7.32	1984	158	0.38	17.633
2019_10_13	15:40:08	142	24.88	0.19	7.32	1986	160	0.34	17.803
2019_10_13	15:41:08	142	26.81	0.14	7.32	1974	158	0.38	17.57
2019_10_13	15:42:08	142	26.2	0.12	7.32	1960	158	0.34	17.455
2019_10_13	15:43:08	142	26.76	0.07	7.33	1956	158	0.34	17.507
2019_10_13	15:44:08	142	25.43	0.05	7.33	1950	160	0.38	17.547
2019_10_13	15:45:08	142	26.71	0.06	7.33	1939	158	0.38	17.621
2019_10_13	15:46:08	142	26.74	0.06	7.34	1947	158	0.38	16.015
2019_10_13	15:47:08	143	26.78	0.16	7.34	1951	160	0.28	20.69
2019_10_13	15:48:08	142	19.5	0.15	7.35	1944	160	0.12	20.73
2019_10_13	15:49:08	142	26.63	0.15	7.35	1949	160	0.07	20.753
2019_10_13	15:50:08	143	27.11	0.11	7.36	1959	160	0.12	20.719
2019_10_13	15:51:08	141	26.6	0.15	7.36	1978	160	0.06	20.728
2019_10_13	15:52:08	142	26.8	0.19	7.36	1998	160	0.33	20.703
2019_10_13	15:53:08	142	26.6	0.26	7.36	2002	163	0.54	20.708
2019_10_13	15:54:08	142	26.56	0.26	7.35	2011	158	0.28	20.707
2019_10_13	15:55:08	142	26.64	0.29	7.35	2018	160	0.38	17.46
2019_10_13	15:56:08	142	26.57	0.3	7.35	2015	159	0.38	20.631
2019_10_13	15:57:08	142	26.6	0.33	7.35	2011	158	0.33	20.685
2019_10_13	15:58:08	143	26.74	0.31	7.34	2007	157	0.18	20.719
2019_10_13	15:59:08	142	26.56	0.3	7.35	2028	158	0.17	20.723
2019_10_13	16:00:08	142	26.53	0.29	7.35	2016	159	0.17	20.735
2019_10_13	16:01:08	142	26.63	0.25	7.35	2009	159	0.11	20.73
2019_10_13	16:02:08	142	26.71	0.23	7.35	1998	157	0.07	20.744
2019_10_13	16:03:08	142	26.62	0.18	7.35	2004	160	0.06	20.739
2019_10_13	16:04:08	142	26.37	0.19	7.36	2008	159	0.07	20.746
2019_10_13	16:05:08	142	26.67	0.22	7.36	2006	159	0.12	12.576
2019_10_13	16:06:08	142	26.09	0.25	7.36	1997	160	0.69	12.384
2019_10_13	16:07:08	142	25.9	0.29	7.37	2000	160	0.65	12.439
2019_10_13	16:08:08	142	26.76	0.27	7.37	2000	160	0.59	12.19
2019_10_13	16:09:08	142	26.83	0.24	7.37	2000	159	0.59	12.143
2019_10_13	16:10:08	142	26.49	0.24	7.37	1982	159	0.65	12.323
2019_10_13	16:11:08	142	26.49	0.22	7.37	1968	159	0.7	12.541
2019_10_13	16:12:08	142	26.56	0.18	7.37	1969	159	0.75	12.451
2019_10_13	16:13:08	142	26.63	0.19	7.38	1961	159	0.75	12.491
2019_10_13	16:14:08	141	26.45	0.2	7.38	1961	160	0.7	12.455
2019_10_13	16:15:08	142	26.6	0.18	7.38	1973	159	0.65	12.557
2019_10_13	16:16:08	142	26.53	0.18	7.39	1977	159	0.7	12.591
2019_10_13	16:17:08	142	26.72	0.19	7.39	1985	160	0.64	12.552

PFAS Emissions Testing

Operations Data - 10/13/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	16:18:08	142	26.52	0.2	7.39	2001	160	0.59	12.582
2019_10_13	16:19:08	141	26.46	0.18	7.39	1998	158	0.54	13.163
2019_10_13	16:20:08	141	26.52	0.17	7.39	1998	159	0.54	13.404
2019_10_13	16:21:08	142	26.83	0.14	7.4	2022	159	0.54	13.005
2019_10_13	16:22:08	141	27.11	0.12	7.41	2039	159	0.49	12.924
2019_10_13	16:23:08	142	27.15	0.11	7.42	2039	160	0.49	12.91
2019_10_13	16:24:08	142	27.35	0.14	7.42	2031	159	0.43	12.871
2019_10_13	16:25:08	141	27.47	0.14	7.43	2026	159	0.43	13.185
2019_10_13	16:26:08	142	27.53	0.15	7.43	2027	158	0.43	13.31
2019_10_13	16:27:08	142	27.86	0.17	7.44	2022	159	0.43	13.425
2019_10_13	16:28:08	142	27.86	0.18	7.45	2017	160	0.43	13.53
2019_10_13	16:29:08	142	28.09	0.21	7.45	2016	160	0.43	13.57
2019_10_13	16:30:08	142	28.29	0.23	7.45	2026	159	0.43	13.723
2019_10_13	16:31:08	142	28.26	0.22	7.46	2034	160	0.43	13.541
2019_10_13	16:32:08	142	28.49	0.25	7.46	2022	160	0.43	13.58
2019_10_13	16:33:08	142	28.67	0.26	7.47	2039	160	0.43	13.563
2019_10_13	16:34:08	142	52.84	0.26	7.47	2035	160	0.43	13.765
2019_10_13	16:35:08	142	37.04	0.26	7.48	2038	160	0.43	13.331
2019_10_13	16:36:08	141	41.99	0.22	7.48	2043	160	0.43	13.229
2019_10_13	16:37:08	142	38.46	0.2	7.49	2037	162	0.54	12.836
2019_10_13	16:38:08	142	35.71	0.2	7.49	2037	160	0.59	13.01
2019_10_13	16:39:08	141	45.72	0.2	7.5	2030	162	0.49	12.98
2019_10_13	16:40:08	142	41.6	0.18	7.51	2021	162	0.59	12.849
2019_10_13	16:41:08	142	44.85	0.18	7.51	2011	163	0.59	12.939
2019_10_13	16:42:08	142	42.47	0.18	7.52	2008	162	0.54	12.982
2019_10_13	16:43:08	142	42.47	0.18	7.52	2008	162	0.54	12.987
2019_10_13	16:44:08	141	41.79	0.14	7.53	2003	160	0.54	12.809
2019_10_13	16:45:08	142	41.33	0.15	7.53	1999	160	0.59	12.948
2019_10_13	16:46:08	141	30.48	0.16	7.53	1987	162	0.54	12.926
2019_10_13	16:47:08	142	30.05	0.16	7.54	1987	162	0.54	12.946
2019_10_13	16:48:08	142	29.5	0.18	7.55	1982	159	0.54	12.833
2019_10_13	16:49:08	141	29	0.18	7.55	1978	160	0.59	12.713
2019_10_13	16:50:08	142	30.95	0.16	7.56	1983	161	0.59	12.759
2019_10_13	16:51:08	141	31.09	0.17	7.56	1995	159	0.59	13.015
2019_10_13	16:52:08	141	31.32	0.18	7.57	1991	161	0.54	13.223
2019_10_13	16:53:08	142	31.69	0.2	7.57	1995	160	0.54	13.442
2019_10_13	16:54:08	141	31.72	0.19	7.57	1999	158	0.59	13.387
2019_10_13	16:55:08	142	29.47	0.18	7.57	2002	158	0.54	13.494
2019_10_13	16:56:08	142	28.53	0.13	7.56	2004	154	0.54	13.537
2019_10_13	16:57:08	142	28.57	0.15	7.56	2006	156	0.54	12.79
2019_10_13	16:58:08	142	28.83	0.15	7.54	2009	158	0.59	12.551
2019_10_13	16:59:08	142	28.8	0.17	7.52	1999	160	0.75	12.668
2019_10_13	17:00:08	142	21.77	0.14	7.52	1977	159	0.75	12.819
2019_10_13	17:01:08	142	21.95	0.14	7.52	1964	161	0.59	12.905
2019_10_13	17:02:08	142	20.32	0.16	7.52	1949	162	0.59	12.936
2019_10_13	17:03:08	142	20.38	0.16	7.52	1926	162	0.54	13.002
2019_10_13	17:04:08	142	21.95	0.14	7.53	1920	162	0.54	13.118
2019_10_13	17:05:08	143	19.36	0.14	7.53	1909	160	0.54	13.181
2019_10_13	17:06:08	141	18.73	0.13	7.54	1905	162	0.59	13.196
2019_10_13	17:07:08	142	19.6	0.13	7.54	1901	161	0.64	12.96
2019_10_13	17:08:08	142	21.12	0.12	7.54	1914	161	0.9	12.927
2019_10_13	17:09:08	142	19.27	0.14	7.53	1924	161	1	12.579
2019_10_13	17:10:08	141	21.47	0.13	7.53	1941	161	1.17	12.51
2019_10_13	17:11:08	142	21.95	0.11	7.53	1953	162	1.01	12.698
2019_10_13	17:12:08	142	18.62	0.12	7.52	1949	161	0.91	12.689
2019_10_13	17:13:08	142	20.61	0.14	7.52	1948	161	0.91	12.536
2019_10_13	17:14:08	142	23.82	0.12	7.52	1950	161	0.96	12.373
2019_10_13	17:15:08	141	21.76	0.11	7.52	1958	161	0.85	12.431
2019_10_13	17:16:08	142	19.6	0.12	7.52	1953	161	0.86	12.19
2019_10_13	17:17:08	141	18.66	0.12	7.53	1959	162	0.85	12.474
2019_10_13	17:18:08	142	18.57	0.1	7.53	1958	163	0.8	12.444
2019_10_13	17:19:08	142	24.1	0.13	7.54	1965	162	0.85	12.391
2019_10_13	17:20:08	141	20.57	0.13	7.54	1972	161	0.95	12.397
2019_10_13	17:21:08	141	19.6	0.12	7.54	1968	161	0.91	12.455
2019_10_13	17:22:08	142	21.96	0.12	7.54	1956	162	0.8	12.513
2019_10_13	17:23:08	142	29.53	0.11	7.55	1973	161	0.75	12.6

PFAS Emissions Testing

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DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	17:24:08	142	29.73	0.12	7.55	1952	161	0.8	12.599
2019_10_13	17:25:08	142	29.59	0.13	7.56	1958	161	0.8	12.394
2019_10_13	17:26:08	141	29.66	0.11	7.56	1954	160	0.75	12.512
2019_10_13	17:27:08	141	30.09	0.09	7.56	1954	161	0.8	12.441
2019_10_13	17:28:08	142	29.97	0.1	7.57	1951	161	0.85	12.592
2019_10_13	17:29:08	142	28.02	0.12	7.57	1949	161	0.85	12.512
2019_10_13	17:30:08	142	30.09	0.13	7.57	1946	161	0.8	12.553
2019_10_13	17:31:08	142	30.87	0.13	7.58	1959	161	0.8	12.502
2019_10_13	17:32:08	141	30.33	0.11	7.58	1948	160	0.85	12.427
2019_10_13	17:33:08	141	29.5	0.14	7.58	1949	160	0.8	12.432
2019_10_13	17:34:08	142	29.66	0.13	7.58	1938	162	0.8	12.658
2019_10_13	17:35:08	141	21.71	0.12	7.58	1944	160	0.85	12.615
2019_10_13	17:36:08	141	21.37	0.12	7.59	1943	161	0.91	12.623
2019_10_13	17:37:08	141	21.95	0.12	7.59	1944	161	0.96	12.533
2019_10_13	17:38:08	142	21.75	0.14	7.59	1947	161	0.96	12.479
2019_10_13	17:39:08	141	21.35	0.14	7.6	1941	161	1	12.545
2019_10_13	17:40:08	142	21.47	0.14	7.6	1947	161	0.96	12.654
2019_10_13	17:41:08	141	30.64	0.14	7.6	1957	162	1.06	12.695

PFAS Emissions Testing

Operations Data - 10/14/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	16:30:09	140	53.47	0.16	7.38	2012	158	1.47	12.123
2019_10_14	16:31:09	141	53.99	0.15	7.38	2003	161	1.57	11.715
2019_10_14	16:32:09	141	53.8	0.14	7.37	1999	160	1.58	12.053
2019_10_14	16:33:09	141	51.17	0.12	7.37	1996	158	1.41	11.988
2019_10_14	16:34:09	141	51.84	0.12	7.35	2003	160	1.42	11.804
2019_10_14	16:35:09	141	50.79	0.14	7.36	2023	160	1.52	11.95
2019_10_14	16:36:09	141	48.35	0.16	7.36	2020	160	1.47	11.823
2019_10_14	16:37:09	141	50.26	0.13	7.36	2040	162	1.47	11.663
2019_10_14	16:38:09	141	53.47	0.12	7.36	2051	161	1.42	11.948
2019_10_14	16:39:09	141	53.83	0.16	7.36	2004	158	1.37	11.208
2019_10_14	16:40:09	141	52.16	0.13	7.35	2015	162	1.42	11.51
2019_10_14	16:41:09	141	53.68	0.16	7.36	2021	161	1.57	12.027
2019_10_14	16:42:09	140	54.25	0.16	7.36	1982	160	1.57	11.683
2019_10_14	16:43:09	141	52.08	0.14	7.34	1968	160	1.47	11.695
2019_10_14	16:44:09	141	55.11	0.12	7.35	2015	163	1.68	11.974
2019_10_14	16:45:09	141	53.91	0.16	7.36	2022	162	1.63	12.128
2019_10_14	16:46:09	141	53.87	0.14	7.36	2022	160	1.47	11.557
2019_10_14	16:47:09	140	51.5	0.16	7.36	1991	159	1.42	11.73
2019_10_14	16:48:09	140	52.67	0.12	7.35	2002	160	1.37	11.54
2019_10_14	16:49:09	141	53.67	0.13	7.35	2002	160	1.53	12.11
2019_10_14	16:50:09	140	53.8	0.15	7.35	1956	158	1.47	11.832
2019_10_14	16:51:09	141	53.8	0.11	7.35	1976	162	1.42	11.752
2019_10_14	16:52:09	140	54.1	0.12	7.36	1981	159	1.63	12.512
2019_10_14	16:53:09	140	54.27	0.12	7.36	1960	159	1.53	12.067
2019_10_14	16:54:09	141	54.26	0.08	7.36	1983	160	1.42	11.916
2019_10_14	16:55:09	141	54.41	0.12	7.36	1964	159	1.52	12.103
2019_10_14	16:56:09	141	54.73	0.15	7.35	1940	156	1.42	11.899
2019_10_14	16:57:09	141	54.68	0.11	7.35	1959	159	1.47	12.05
2019_10_14	16:58:09	141	54.53	0.11	7.36	1962	158	1.58	12.416
2019_10_14	16:59:09	141	54.53	0.15	7.35	1947	154	1.52	11.925
2019_10_14	17:00:09	141	52.43	0.12	7.35	1969	160	1.47	12.208
2019_10_14	17:01:09	141	52.43	0.12	7.36	1990	163	1.68	12.459
2019_10_14	17:02:09	140	52.78	0.11	7.39	1996	163	1.73	11.891
2019_10_14	17:03:09	141	53.08	0.15	7.39	1977	162	2	11.781
2019_10_14	17:04:09	141	53.08	0.15	7.37	1972	160	1.73	11.885
2019_10_14	17:05:09	140	53.08	0.14	7.37	1962	162	1.58	12.184
2019_10_14	17:06:09	141	53.08	0.15	7.37	1956	162	1.42	12.135
2019_10_14	17:07:09	141	53.08	0.15	7.37	1951	162	1.42	12.015
2019_10_14	17:08:09	140	53.08	0.14	7.37	1950	160	1.42	12.189
2019_10_14	17:09:09	141	53.08	0.15	7.37	1951	160	1.58	12.157
2019_10_14	17:10:09	140	53.08	0.13	7.37	1944	162	1.52	12.082
2019_10_14	17:11:09	141	53.08	0.12	7.37	1945	160	1.41	11.965
2019_10_14	17:12:09	140	53.08	0.13	7.37	1938	160	1.42	12.189
2019_10_14	17:13:09	141	53.08	0.13	7.38	1944	160	1.41	12.232
2019_10_14	17:14:09	140	53.08	0.15	7.38	1950	159	1.37	12.475
2019_10_14	17:15:09	141	53.08	0.16	7.38	1981	159	1.32	12.099
2019_10_14	17:16:09	141	53.08	0.15	7.38	1991	158	1.32	12.626
2019_10_14	17:17:09	141	53.08	0.15	7.38	1986	158	1.32	12.286
2019_10_14	17:18:09	140	53.08	0.13	7.38	1993	158	1.21	12.246
2019_10_14	17:19:09	141	53.08	0.12	7.38	1990	159	1.21	12.252
2019_10_14	17:20:09	140	53.09	0.16	7.38	1989	158	1.21	12.294
2019_10_14	17:21:09	141	53.08	0.15	7.38	1988	158	1.16	12.373
2019_10_14	17:22:09	141	53.08	0.17	7.38	1980	158	1.21	12.338
2019_10_14	17:23:09	141	53.08	0.15	7.38	1986	159	1.21	12.319
2019_10_14	17:24:09	140	53.08	0.16	7.38	1978	160	1.21	12.359
2019_10_14	17:25:09	142	53.08	0.16	7.38	1981	162	1.21	12.212
2019_10_14	17:26:09	140	53.08	0.18	7.38	1973	160	1.21	12.397
2019_10_14	17:27:09	140	53.08	0.17	7.37	1967	159	1.21	12.257
2019_10_14	17:28:09	140	53.08	0.18	7.37	1963	162	1.27	12.458
2019_10_14	17:29:09	140	53.08	0.16	7.38	1954	160	1.21	12.38
2019_10_14	17:30:09	140	53.09	0.17	7.38	1950	159	1.26	12.22
2019_10_14	17:31:09	141	53.08	0.15	7.38	1948	162	1.26	12.557
2019_10_14	17:32:09	141	53.09	0.14	7.38	1941	159	1.21	12.351
2019_10_14	17:33:09	140	53.09	0.16	7.38	1941	162	1.26	12.474
2019_10_14	17:34:09	141	53.09	0.16	7.38	1945	162	1.27	12.389
2019_10_14	17:35:09	141	53.09	0.15	7.38	1938	158	1.26	12.396

PFAS Emissions Testing

Operations Data - 10/14/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	17:36:09	141	53.09	0.17	7.38	1942	161	1.26	12.837
2019_10_14	17:37:09	139	53.09	0.17	7.38	1948	162	1.21	12.432
2019_10_14	17:38:09	141	53.09	0.17	7.38	1945	160	1.27	12.37
2019_10_14	17:39:09	141	53.09	0.14	7.38	1935	161	1.32	12.339
2019_10_14	17:40:09	140	53.09	0.16	7.38	1950	160	1.32	12.365
2019_10_14	17:41:09	140	53.09	0.13	7.39	1948	161	1.32	12.41
2019_10_14	17:42:09	140	53.09	0.14	7.38	1947	160	1.27	12.422
2019_10_14	17:43:09	140	53.06	0.14	7.38	1942	159	1.32	12.208
2019_10_14	17:44:09	140	56.5	0.17	7.38	1929	162	1.37	12.345
2019_10_14	17:45:09	140	29.75	0.14	7.38	1926	162	1.32	12.347
2019_10_14	17:46:09	140	29.98	0.17	7.39	1925	159	1.42	12.864
2019_10_14	17:47:09	141	29.02	0.15	7.39	1923	161	1.27	12.537
2019_10_14	17:48:09	141	29.38	0.15	7.39	1917	158	1.32	12.42
2019_10_14	17:49:09	141	28.24	0.13	7.39	1925	159	1.32	12.538
2019_10_14	17:50:09	141	29.6	0.12	7.39	1926	160	1.37	12.37
2019_10_14	17:51:09	140	27.36	0.11	7.39	1923	160	1.37	12.868
2019_10_14	17:52:09	141	30.07	0.14	7.39	1924	159	1.32	12.553
2019_10_14	17:53:09	141	28.36	0.16	7.39	1922	160	1.32	12.6
2019_10_14	17:54:09	140	30.07	0.16	7.39	1915	159	1.37	12.512
2019_10_14	17:55:09	141	30.11	0.13	7.39	1905	159	1.37	12.635
2019_10_14	17:56:09	141	30.18	0.15	7.39	1916	159	1.42	12.604
2019_10_14	17:57:09	140	30.15	0.17	7.39	1903	159	1.47	12.791
2019_10_14	17:58:09	141	30.18	0.17	7.4	1896	159	1.42	12.567
2019_10_14	17:59:09	141	30.18	0.14	7.4	1889	161	1.47	12.803
2019_10_14	18:00:09	141	30.22	0.13	7.41	1890	159	1.42	12.958
2019_10_14	18:01:09	140	30.25	0.13	7.41	1887	160	1.41	13.321
2019_10_14	18:02:09	141	30.29	0.11	7.42	1887	161	1.32	13.028
2019_10_14	18:03:09	140	30.14	0.12	7.42	1883	160	1.41	12.976
2019_10_14	18:04:09	141	30.22	0.12	7.43	1887	159	1.37	12.897
2019_10_14	18:05:09	141	30.25	0.12	7.42	1886	159	1.37	12.709
2019_10_14	18:06:09	140	30.29	0.12	7.41	1880	162	1.47	12.661
2019_10_14	18:07:09	141	30.14	0.14	7.41	1886	161	1.41	12.562
2019_10_14	18:08:09	141	30.18	0.12	7.4	1871	162	1.47	12.509
2019_10_14	18:09:09	140	30.02	0.13	7.4	1874	161	1.63	12.714
2019_10_14	18:10:09	141	30.02	0.17	7.41	1878	161	1.73	12.762
2019_10_14	18:11:09	140	29.91	0.15	7.42	1875	161	1.63	13.032
2019_10_14	18:12:09	141	29.17	0.16	7.42	1867	160	1.52	12.896
2019_10_14	18:13:09	140	29.67	0.14	7.42	1884	160	1.52	13.125
2019_10_14	18:14:09	141	29.58	0.11	7.42	1892	160	1.41	12.9
2019_10_14	18:15:09	140	29.4	0.11	7.41	1899	158	1.41	12.751
2019_10_14	18:16:09	140	29.12	0.11	7.4	1888	158	1.41	12.7
2019_10_14	18:17:09	140	29.38	0.12	7.4	1880	158	1.62	12.601
2019_10_14	18:18:09	141	29.36	0.09	7.4	1887	158	1.57	12.686
2019_10_14	18:19:09	141	29.14	0.1	7.39	1885	158	1.57	13.038
2019_10_14	18:20:09	140	29.17	0.1	7.39	1881	158	1.41	12.757
2019_10_14	18:21:09	141	28.21	0.11	7.39	1885	158	1.52	12.697
2019_10_14	18:22:09	140	28.94	0.12	7.39	1874	158	1.47	12.797
2019_10_14	18:23:09	141	28.84	0.13	7.39	1875	157	1.47	12.791
2019_10_14	18:24:09	141	27.67	0.14	7.39	1878	157	1.52	12.919
2019_10_14	18:25:09	140	28.37	0.11	7.39	1866	158	1.47	12.842
2019_10_14	18:26:09	140	26.9	0.09	7.39	1860	160	1.47	12.959
2019_10_14	18:27:09	140	28.47	0.09	7.39	1860	158	1.47	12.775
2019_10_14	18:28:09	141	28.37	0.12	7.38	1852	158	1.47	12.705
2019_10_14	18:29:09	140	28.34	0.11	7.38	1840	160	1.52	12.787
2019_10_14	18:30:09	141	28	0.12	7.39	1846	160	1.57	13.158
2019_10_14	18:31:09	140	28.1	0.11	7.39	1848	160	1.57	12.965
2019_10_14	18:32:09	141	28.01	0.14	7.38	1846	158	1.63	12.711
2019_10_14	18:33:09	141	27.95	0.2	7.38	1847	158	1.58	12.867
2019_10_14	18:34:09	141	27.54	0.22	7.38	1841	158	1.68	13.103
2019_10_14	18:35:09	141	27.56	0.2	7.38	1861	158	1.52	12.853
2019_10_14	18:36:09	141	27.64	0.2	7.38	1894	160	1.57	12.833
2019_10_14	18:37:09	141	27.56	0.2	7.37	1908	160	1.52	12.482
2019_10_14	18:38:09	141	27.47	0.17	7.37	1922	158	1.52	12.743
2019_10_14	18:39:09	141	24.78	0.16	7.36	1917	158	1.37	12.606
2019_10_14	18:40:09	140	21.66	0.16	7.36	1922	158	1.47	12.61
2019_10_14	18:41:09	141	22.25	0.15	7.36	1920	158	1.47	12.6

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	18:42:09	141	22.7	0.13	7.36	1928	158	1.47	12.538
2019_10_14	18:43:09	141	27.54	0.13	7.36	1913	158	1.52	12.82
2019_10_14	18:44:09	140	19.75	0.15	7.36	1918	158	1.46	12.786
2019_10_14	18:45:09	141	20.33	0.14	7.36	1925	158	1.47	12.822
2019_10_14	18:46:09	141	24.26	0.16	7.36	1915	158	1.47	12.367
2019_10_14	18:47:09	142	24.85	0.16	7.35	1907	156	1.47	12.822
2019_10_14	18:48:09	141	24.06	0.17	7.35	1907	157	1.41	12.95
2019_10_14	18:49:09	141	20.6	0.16	7.36	1925	157	1.47	12.798
2019_10_14	18:50:09	141	26.56	0.18	7.35	1940	156	1.42	12.486
2019_10_14	18:51:09	140	21.33	0.16	7.35	1929	156	1.42	12.453
2019_10_14	18:52:09	141	26.37	0.12	7.35	1923	157	1.32	12.49
2019_10_14	18:53:09	141	19.27	0.12	7.35	1910	157	1.37	12.666
2019_10_14	18:54:09	140	26.28	0.13	7.35	1931	156	1.52	12.866
2019_10_14	18:55:09	141	26.14	0.13	7.35	1919	157	1.41	12.523
2019_10_14	18:56:09	141	25.51	0.12	7.35	1936	157	1.42	12.598
2019_10_14	18:57:09	141	26.01	0.12	7.35	1932	157	1.42	12.641
2019_10_14	18:58:09	141	25.94	0.13	7.34	1931	156	1.32	12.507
2019_10_14	18:59:09	141	25.87	0.12	7.34	1932	157	1.37	12.546
2019_10_14	19:00:09	141	25.7	0.1	7.34	1938	157	1.41	12.722
2019_10_14	19:01:09	140	25.34	0.1	7.35	1923	158	1.37	12.681
2019_10_14	19:02:09	141	23.56	0.11	7.34	1908	158	1.63	12.46
2019_10_14	19:03:09	142	25.54	0.1	7.34	1903	158	1.63	12.487
2019_10_14	19:04:09	141	25.44	0.07	7.34	1890	158	1.56	12.593
2019_10_14	19:05:09	142	25.44	0.09	7.35	1883	158	1.52	12.651
2019_10_14	19:06:09	140	25.9	0.12	7.35	1876	158	1.42	12.604
2019_10_14	19:07:09	141	25.31	0.12	7.35	1866	160	1.47	12.704
2019_10_14	19:08:09	141	25.27	0.13	7.35	1865	158	1.37	12.723
2019_10_14	19:09:09	141	25.23	0.14	7.36	1860	158	1.42	12.686
2019_10_14	19:10:09	141	25.23	0.13	7.36	1860	158	1.42	12.766
2019_10_14	19:11:09	141	22.25	0.1	7.36	1886	158	1.45	12.896
2019_10_14	19:12:09	141	25.31	0.12	7.36	1906	158	1.37	12.688
2019_10_14	19:13:09	141	21.01	0.14	7.36	1926	158	1.42	12.417
2019_10_14	19:14:09	141	19.98	0.09	7.35	1932	158	1.32	12.482
2019_10_14	19:15:09	141	25.16	0.09	7.35	1921	156	1.32	12.526
2019_10_14	19:16:09	141	25.16	0.11	7.35	1931	156	1.32	12.544
2019_10_14	19:17:09	141	20.4	0.14	7.35	1925	155	1.26	12.574
2019_10_14	19:18:09	141	24.63	0.15	7.35	1942	156	1.32	12.669
2019_10_14	19:19:09	141	20.1	0.15	7.35	1959	156	1.26	12.575
2019_10_14	19:20:09	141	25.33	0.17	7.35	1947	156	1.21	12.178
2019_10_14	19:21:09	140	24.2	0.11	7.35	1942	155	1.21	12.353
2019_10_14	19:22:09	141	25.27	0.1	7.34	1929	156	1.11	12.505
2019_10_14	19:23:09	141	24.18	0.14	7.35	1914	156	1.11	12.453
2019_10_14	19:24:09	141	25.15	0.16	7.35	1909	156	1.16	12.925
2019_10_14	19:25:09	140	25.11	0.16	7.35	1903	156	1.06	12.66
2019_10_14	19:26:09	141	24.21	0.14	7.36	1893	156	1.16	12.632
2019_10_14	19:27:09	141	25.27	0.11	7.36	1898	156	1.11	12.637
2019_10_14	19:28:09	141	25.2	0.08	7.36	1913	156	1.11	12.514
2019_10_14	19:29:09	141	25.16	0.09	7.37	1914	156	1.11	13.025
2019_10_14	19:30:09	141	24.64	0.09	7.36	1914	155	1	12.51
2019_10_14	19:31:09	141	25.2	0.07	7.36	1916	156	0.99	12.578
2019_10_14	19:32:09	141	19.64	0.09	7.36	1917	156	1	12.524
2019_10_14	19:33:09	141	25.15	0.09	7.36	1907	158	0.95	12.504
2019_10_14	19:34:09	141	24.41	0.15	7.37	1896	159	0.95	13.027
2019_10_14	19:35:09	141	25.74	0.14	7.37	1898	156	0.95	12.644
2019_10_14	19:36:09	140	23.66	0.14	7.37	1890	158	1	12.456
2019_10_14	19:37:09	141	24.49	0.15	7.37	1886	158	1	12.515
2019_10_14	19:38:09	141	25.14	0.13	7.37	1878	158	1	12.568
2019_10_14	19:39:09	141	25.27	0.15	7.37	1875	159	1.05	12.796
2019_10_14	19:40:09	141	25.6	0.15	7.37	1872	159	1	12.592
2019_10_14	19:41:09	140	24.99	0.14	7.38	1866	158	1.11	12.705
2019_10_14	19:42:09	141	25.14	0.14	7.38	1867	159	1.05	12.697
2019_10_14	19:43:09	141	25.2	0.09	7.39	1861	159	1.05	12.688
2019_10_14	19:44:09	141	25.31	0.09	7.39	1863	158	1	12.59
2019_10_14	19:45:09	141	20.9	0.08	7.39	1856	161	1.05	12.928
2019_10_14	19:46:09	140	24.53	0.1	7.39	1869	159	1.11	12.764
2019_10_14	19:47:09	141	25.06	0.12	7.4	1874	159	1.11	12.836

PFAS Emissions Testing

Operations Data - 10/14/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	19:48:09	141	25.17	0.13	7.4	1885	158	1.11	12.517
2019_10_14	19:49:09	141	24.13	0.11	7.4	1882	160	1.05	12.6
2019_10_14	19:50:09	141	25.27	0.13	7.4	1865	159	1.11	12.582
2019_10_14	19:51:09	141	24.22	0.1	7.4	1861	158	1.41	13.056
2019_10_14	19:52:09	141	24.77	0.12	7.4	1859	159	1.16	12.956
2019_10_14	19:53:09	141	25.38	0.14	7.4	1858	158	1.11	13.107
2019_10_14	19:54:09	141	21.27	0.12	7.4	1853	158	1.05	12.772
2019_10_14	19:55:09	141	25.54	0.12	7.4	1850	156	1	12.691
2019_10_14	19:56:09	141	21.74	0.14	7.4	1849	156	1	12.883
2019_10_14	19:57:09	141	25.67	0.15	7.4	1875	156	1.05	12.659
2019_10_14	19:58:09	142	19.76	0.15	7.4	1909	158	1.11	12.773
2019_10_14	19:59:09	140	25.81	0.15	7.4	1936	158	1.05	12.73
2019_10_14	20:00:09	141	25.51	0.14	7.39	1955	158	0.9	12.458
2019_10_14	20:01:09	142	25.81	0.12	7.38	1955	156	0.84	12.329
2019_10_14	20:02:09	140	24.4	0.12	7.38	1968	158	0.89	12.649
2019_10_14	20:03:09	141	26.01	0.11	7.37	1975	159	0.8	12.369
2019_10_14	20:04:09	141	22.81	0.14	7.37	1978	159	0.89	12.502
2019_10_14	20:05:09	141	26.08	0.15	7.38	1990	158	0.79	12.339
2019_10_14	20:06:09	140	26.87	0.16	7.37	1982	158	0.85	12.601
2019_10_14	20:07:09	141	24.77	0.12	7.37	1989	158	0.79	12.386
2019_10_14	20:08:09	140	19.87	0.12	7.38	1985	160	0.85	12.731
2019_10_14	20:09:09	141	26.47	0.11	7.38	1982	159	0.85	12.471
2019_10_14	20:10:09	141	19.73	0.08	7.38	1980	160	0.95	12.609
2019_10_14	20:11:09	141	21.95	0.1	7.38	1975	160	0.9	12.392
2019_10_14	20:12:09	141	26.18	0.08	7.38	1980	160	0.89	12.504
2019_10_14	20:13:09	141	24.81	0.11	7.38	1978	158	0.85	12.447
2019_10_14	20:14:09	140	26.29	0.14	7.38	1982	159	0.89	12.605
2019_10_14	20:15:09	141	24.56	0.15	7.38	1973	159	1.52	12.417
2019_10_14	20:16:09	141	26.44	0.18	7.38	1973	159	1.21	12.514
2019_10_14	20:17:09	141	26.48	0.2	7.38	1972	161	1.11	12.478
2019_10_14	20:18:09	141	20.6	0.19	7.38	1976	158	1	12.512
2019_10_14	20:19:09	140	26.95	0.2	7.38	1974	161	0.95	12.592
2019_10_14	20:20:09	141	21.85	0.19	7.38	1976	162	0.9	12.487
2019_10_14	20:21:09	141	26.51	0.18	7.39	1976	158	0.95	12.367
2019_10_14	20:22:09	140	26.71	0.19	7.38	1974	158	0.9	12.537
2019_10_14	20:23:09	140	26.88	0.2	7.38	1976	160	0.89	12.666
2019_10_14	20:24:09	140	21.33	0.18	7.38	1970	158	0.9	12.688
2019_10_14	20:25:09	141	26.8	0.15	7.38	1969	158	1	12.575
2019_10_14	20:26:09	141	26.75	0.15	7.38	1978	160	1.05	12.675
2019_10_14	20:27:09	141	26.8	0.12	7.38	1988	160	0.95	12.608
2019_10_14	20:28:09	140	26.5	0.09	7.38	1984	160	1.16	12.817
2019_10_14	20:29:09	140	17.49	0.14	7.38	1976	157	0.95	12.558
2019_10_14	20:30:09	141	22.36	0.11	7.38	1989	158	0.95	12.642
2019_10_14	20:31:09	140	21.67	0.1	7.39	1991	160	0.95	12.714
2019_10_14	20:32:09	141	18.87	0.11	7.39	1991	158	1	12.571
2019_10_14	20:33:09	140	19.43	0.11	7.39	1985	160	0.9	12.541
2019_10_14	20:34:09	141	25.34	0.11	7.39	1980	160	1.11	12.464
2019_10_14	20:35:09	141	25.34	0.14	7.39	1971	158	1.11	12.667
2019_10_14	20:36:09	140	27.55	0.13	7.39	1978	157	1.05	12.503
2019_10_14	20:37:09	141	21.82	0.15	7.39	1975	158	0.95	12.58
2019_10_14	20:38:09	140	19.74	0.15	7.39	1974	158	1.05	12.648
2019_10_14	20:39:09	141	27.38	0.16	7.38	1973	158	0.95	12.68
2019_10_14	20:40:09	141	19.55	0.17	7.38	1974	160	1.05	12.707
2019_10_14	20:41:09	141	26.18	0.16	7.38	1977	157	0.95	12.554
2019_10_14	20:42:09	141	27.67	0.12	7.38	1981	156	1	12.623
2019_10_14	20:43:09	141	24.17	0.13	7.38	1983	158	0.91	12.518
2019_10_14	20:44:09	141	19.51	0.12	7.37	1977	157	0.9	12.572
2019_10_14	20:45:09	141	27.71	0.11	7.37	1980	156	0.95	12.524
2019_10_14	20:46:09	140	20.14	0.1	7.37	1974	157	1	12.725
2019_10_14	20:47:09	141	26.17	0.1	7.37	1973	157	0.95	12.579
2019_10_14	20:48:09	141	27.89	0.09	7.37	1977	158	0.9	12.668
2019_10_14	20:49:09	140	27.72	0.14	7.37	1981	157	0.95	12.572
2019_10_14	20:50:09	141	27.67	0.19	7.37	1972	158	0.95	12.741
2019_10_14	20:51:09	141	24.34	0.18	7.37	1985	158	0.9	12.556
2019_10_14	20:52:09	141	28.02	0.2	7.37	1981	158	0.95	12.558
2019_10_14	20:53:09	141	28.05	0.23	7.37	1973	157	1	12.446

PFAS Emissions Testing

Operations Data - 10/14/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	20:54:09	140	25.51	0.25	7.37	1998	156	0.95	12.5
2019_10_14	20:55:09	141	23.99	0.24	7.38	2037	156	1	13.455
2019_10_14	20:56:09	142	27.58	0.25	7.39	2027	156	0.95	13.689
2019_10_14	20:57:09	140	24.5	0.22	7.38	2007	156	0.95	12.903
2019_10_14	20:58:09	140	23.59	0.23	7.38	1991	156	0.95	12.591
2019_10_14	20:59:09	141	27.15	0.23	7.37	1978	156	0.95	12.745
2019_10_14	21:00:09	140	20.27	0.22	7.37	1972	154	0.95	12.716
2019_10_14	21:01:09	140	21.65	0.21	7.37	1975	154	0.95	12.993
2019_10_14	21:02:09	140	19.75	0.21	7.37	1978	157	0.9	12.814
2019_10_14	21:03:09	141	28.06	0.25	7.37	1986	156	1.06	12.656
2019_10_14	21:04:09	141	28.09	0.28	7.37	1987	156	1	12.752
2019_10_14	21:05:09	141	23.8	0.29	7.37	1983	156	1	12.629
2019_10_14	21:06:09	140	24.65	0.24	7.37	1985	156	1	12.608
2019_10_14	21:07:09	140	28.42	0.2	7.36	1983	156	1	12.681
2019_10_14	21:08:09	140	28.17	0.19	7.37	1978	156	0.95	12.762

PFAS Emissions Testing

Operations Data - 10/16/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	12:00:10	136	46.09	0.31	7.44	1939	158	2.9	12.476
2019_10_16	12:01:10	137	45.92	0.32	7.43	1962	157	2.47	11.696
2019_10_16	12:02:10	137	40.89	0.28	7.41	1973	158	2.36	11.341
2019_10_16	12:03:10	137	41.4	0.3	7.41	1968	157	2.26	11.642
2019_10_16	12:04:10	137	40.04	0.29	7.41	1969	156	2.05	11.449
2019_10_16	12:05:10	136	41.29	0.3	7.4	1957	156	2.21	11.431
2019_10_16	12:06:10	136	44.24	0.29	7.4	1956	156	2.1	11.414
2019_10_16	12:07:10	138	32.84	0.3	7.41	1953	156	2.26	11.875
2019_10_16	12:08:10	136	42.63	0.31	7.41	1950	156	2.05	11.518
2019_10_16	12:09:10	137	43.39	0.29	7.41	1954	157	2.21	11.491
2019_10_16	12:10:10	137	45.17	0.28	7.41	1957	157	2.1	11.528
2019_10_16	12:11:10	136	44.35	0.26	7.41	1961	157	2.21	11.501
2019_10_16	12:12:10	136	44.32	0.28	7.42	1950	157	2.16	11.577
2019_10_16	12:13:10	137	40.06	0.27	7.42	1952	159	2.36	11.565
2019_10_16	12:14:10	137	33.2	0.28	7.42	1947	156	2.05	11.542
2019_10_16	12:15:10	137	31.08	0.27	7.42	1943	159	2.16	11.447
2019_10_16	12:16:10	136	39.6	0.25	7.42	1931	157	2.31	11.72
2019_10_16	12:17:10	135	41.44	0.24	7.42	1929	159	2.05	11.504
2019_10_16	12:18:10	137	43.29	0.26	7.42	1931	160	2.16	11.599
2019_10_16	12:19:10	137	38.75	0.25	7.43	1926	157	2.36	11.562
2019_10_16	12:20:10	136	46.63	0.22	7.43	1927	160	2.16	11.59
2019_10_16	12:21:10	137	45.68	0.25	7.43	1926	160	2.42	11.542
2019_10_16	12:22:10	136	31.76	0.25	7.43	1920	158	2.21	11.526
2019_10_16	12:23:10	137	41.77	0.23	7.43	1915	160	2.31	11.54
2019_10_16	12:24:10	137	42.15	0.25	7.44	1911	162	2.26	11.755
2019_10_16	12:25:10	136	43.56	0.27	7.44	1909	160	2.16	11.759
2019_10_16	12:26:10	137	45.64	0.27	7.44	1896	158	2.26	11.518
2019_10_16	12:27:10	136	36.02	0.33	7.44	1894	160	2.52	11.605
2019_10_16	12:28:10	137	43.54	0.25	7.45	1889	158	2.21	11.623
2019_10_16	12:29:10	136	44.44	0.24	7.45	1888	159	2.47	11.679
2019_10_16	12:30:10	137	38.5	0.27	7.45	1894	160	2.26	11.714
2019_10_16	12:31:10	137	36.22	0.24	7.46	1886	158	2.36	11.81
2019_10_16	12:32:10	136	36.29	0.26	7.46	1888	156	2.47	11.778
2019_10_16	12:33:10	136	38.81	0.26	7.46	1883	158	2.36	11.787
2019_10_16	12:34:10	136	32.15	0.25	7.47	1888	156	2.31	11.963
2019_10_16	12:35:10	136	39.91	0.25	7.47	1883	156	2.31	11.909
2019_10_16	12:36:10	137	43.72	0.28	7.47	1884	159	2.41	12.06
2019_10_16	12:37:10	136	41.69	0.27	7.47	1878	156	2.31	11.979
2019_10_16	12:38:10	136	33.99	0.29	7.47	1877	158	2.47	12.065
2019_10_16	12:39:10	136	42.87	0.24	7.47	1872	159	2.26	11.816
2019_10_16	12:40:10	136	36.45	0.27	7.47	1858	158	2.36	11.832
2019_10_16	12:41:10	137	41.87	0.25	7.47	1855	155	2.57	11.918
2019_10_16	12:42:10	136	37.02	0.22	7.47	1854	158	2.69	12.173
2019_10_16	12:43:10	137	38.23	0.22	7.48	1853	158	2.36	12.114
2019_10_16	12:44:10	137	31.11	0.26	7.48	1895	159	2.62	12.308
2019_10_16	12:45:10	136	46.46	0.28	7.48	1927	156	2.36	12.185
2019_10_16	12:46:10	137	29.79	0.29	7.47	1940	158	2.57	11.985
2019_10_16	12:47:10	136	39.31	0.25	7.47	1948	158	2.26	11.473
2019_10_16	12:48:10	136	45.29	0.27	7.46	1951	159	2.26	11.322
2019_10_16	12:49:10	137	43.25	0.28	7.46	1945	159	2.38	11.528
2019_10_16	12:50:10	137	42.51	0.26	7.46	1945	159	2.1	11.404
2019_10_16	12:51:10	137	42.46	0.26	7.46	1942	159	2.16	11.465
2019_10_16	12:52:10	135	47.22	0.27	7.46	1934	160	2.39	11.44
2019_10_16	12:53:10	136	38.66	0.27	7.46	1918	158	2.11	11.43
2019_10_16	12:54:10	135	40.21	0.28	7.46	1916	160	2.31	11.501
2019_10_16	12:55:10	135	39	0.29	7.46	1899	158	2.36	11.74
2019_10_16	12:56:10	137	36.05	0.32	7.47	1878	158	2.31	11.707
2019_10_16	12:57:10	136	32.45	0.29	7.48	1879	158	2.52	12.148
2019_10_16	12:58:10	137	38.3	0.31	7.49	1859	155	2.31	12.209
2019_10_16	12:59:10	136	39.91	0.32	7.49	1862	156	2.57	12.369
2019_10_16	13:00:10	136	39.64	0.35	7.5	1876	156	2.31	12.188
2019_10_16	13:01:10	136	34.84	0.32	7.5	1873	156	2.61	12.461
2019_10_16	13:02:10	136	35.4	0.31	7.5	1874	156	2.36	12.278
2019_10_16	13:03:10	137	37.75	0.31	7.5	1861	156	2.41	12.304
2019_10_16	13:04:10	136	40.81	0.31	7.5	1876	155	2.65	12.407
2019_10_16	13:05:10	136	42.02	0.34	7.5	1884	159	2.31	12.412

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	13:06:10	137	39.65	0.35	7.49	1892	159	2.57	12.348
2019_10_16	13:07:10	136	41.35	0.34	7.49	1901	156	2.26	11.76
2019_10_16	13:08:10	136	31.74	0.39	7.48	1896	156	2.49	12.037
2019_10_16	13:09:10	137	39.98	0.35	7.48	1896	159	2.38	12.36
2019_10_16	13:10:10	137	37.95	0.34	7.47	1884	159	2.31	11.963
2019_10_16	13:11:10	137	40.1	0.31	7.47	1869	156	2.36	11.899
2019_10_16	13:12:10	135	43.26	0.32	7.47	1897	156	2.58	11.875
2019_10_16	13:13:10	136	42.78	0.28	7.46	1952	156	2.27	11.793
2019_10_16	13:14:10	136	42.06	0.29	7.46	1984	158	2.57	11.838
2019_10_16	13:15:10	137	39.6	0.28	7.45	1994	158	2.16	11.336
2019_10_16	13:16:10	136	45.75	0.31	7.44	1996	156	2.36	11.608
2019_10_16	13:17:10	136	41.71	0.3	7.44	1994	159	2.1	11.135
2019_10_16	13:18:10	135	41.01	0.33	7.44	1981	158	2.1	11.275
2019_10_16	13:19:10	136	33.51	0.31	7.44	1985	159	2.21	11.134
2019_10_16	13:20:10	136	33.31	0.3	7.44	1990	160	2.1	11.141
2019_10_16	13:21:10	137	41.63	0.28	7.44	1997	160	2.41	11.393
2019_10_16	13:22:10	136	43.24	0.28	7.44	1993	159	2.08	11.095
2019_10_16	13:23:10	137	44.53	0.32	7.44	1992	159	2.28	11.445
2019_10_16	13:24:10	136	32.3	0.31	7.44	1981	159	2	11.275
2019_10_16	13:25:10	137	35.94	0.3	7.44	1986	160	2.28	11.466
2019_10_16	13:26:10	136	41.28	0.28	7.45	1975	159	1.95	11.323
2019_10_16	13:27:10	136	39.45	0.28	7.44	1958	159	2.26	11.353
2019_10_16	13:28:10	136	36.9	0.26	7.44	1959	159	2	11.211
2019_10_16	13:29:10	136	33.24	0.27	7.44	1952	158	2.31	11.579
2019_10_16	13:30:10	136	35.82	0.27	7.45	1950	160	2.05	11.42
2019_10_16	13:31:10	137	35.8	0.29	7.45	1943	159	2.41	11.53
2019_10_16	13:32:10	136	37.69	0.23	7.45	1943	159	2.15	11.475
2019_10_16	13:33:10	136	8.53	0.3	7.46	1932	159	2.36	11.63
2019_10_16	13:34:10	136	8.56	0.28	7.46	1941	160	2.1	11.593
2019_10_16	13:35:10	136	10.3	0.25	7.47	1943	160	2.21	11.568
2019_10_16	13:36:10	136	10.66	0.27	7.47	1939	160	2.46	11.381
2019_10_16	13:37:10	137	8.72	0.27	7.47	1940	160	2.16	11.556
2019_10_16	13:38:10	136	10.38	0.29	7.47	1930	159	2.41	11.538
2019_10_16	13:39:10	136	10.69	0.29	7.48	1927	160	2.16	11.51
2019_10_16	13:40:10	136	10.69	0.3	7.48	1920	160	2.26	11.431
2019_10_16	13:41:10	136	7.51	0.32	7.48	1913	159	2.52	11.573
2019_10_16	13:42:10	136	7.51	0.31	7.48	1915	160	2.52	11.576
2019_10_16	13:43:10	136	7.51	0.32	7.49	1903	159	2.26	11.555
2019_10_16	13:44:10	135	7.51	0.26	7.49	1911	160	2.31	11.79
2019_10_16	13:45:10	135	7.6	0.3	7.49	1903	158	2.42	11.587
2019_10_16	13:46:10	136	7.56	0.28	7.5	1893	159	2.26	11.725
2019_10_16	13:47:10	137	41.17	0.32	7.5	1888	158	2.36	11.646
2019_10_16	13:48:10	136	43.2	0.29	7.5	1883	159	2.31	11.785
2019_10_16	13:49:10	136	35.94	0.27	7.5	1889	159	2.52	11.778
2019_10_16	13:50:10	136	45.6	0.29	7.5	1933	159	2.36	11.891
2019_10_16	13:51:10	136	40.03	0.3	7.5	1980	158	2.36	11.795
2019_10_16	13:52:10	136	47.16	0.27	7.49	1999	160	2.36	11.425
2019_10_16	13:53:10	135	42.03	0.28	7.48	2003	159	2.26	11.639
2019_10_16	13:54:10	136	33.82	0.3	7.48	1991	159	2.05	11.383
2019_10_16	13:55:10	136	35.47	0.25	7.48	1998	156	2.05	11.255
2019_10_16	13:56:10	135	38.09	0.23	7.48	1994	158	2.1	11.387
2019_10_16	13:57:10	135	42.3	0.25	7.48	1990	159	2.01	11.548
2019_10_16	13:58:10	136	45.01	0.27	7.48	1974	159	2.26	11.599
2019_10_16	13:59:10	135	26.5	0.27	7.48	1979	158	1.9	11.321
2019_10_16	14:00:10	135	29.59	0.27	7.49	1977	159	2.11	11.691
2019_10_16	14:01:10	135	25.71	0.29	7.49	1996	157	2.01	11.72
2019_10_16	14:02:10	135	29.62	0.27	7.48	2013	157	2.01	11.621
2019_10_16	14:03:10	136	29.66	0.29	7.47	2017	158	2.1	11.417
2019_10_16	14:04:10	135	29.75	0.26	7.46	2015	158	1.9	10.932
2019_10_16	14:05:10	136	30.05	0.26	7.46	2011	159	2	10.845
2019_10_16	14:06:10	135	30.13	0.26	7.46	2013	159	2.16	11.089
2019_10_16	14:07:10	136	30.87	0.23	7.46	2014	159	1.78	10.824
2019_10_16	14:08:10	135	30.41	0.27	7.47	2018	159	1.95	11.199
2019_10_16	14:09:10	135	30.41	0.25	7.47	2003	157	2.1	11.138
2019_10_16	14:10:10	136	21.36	0.27	7.47	1998	157	2.01	11.18
2019_10_16	14:11:10	135	21.71	0.26	7.47	1988	157	1.84	11.168

PFAS Emissions Testing

Operations Data - 10/16/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	14:12:10	135	21.85	0.25	7.47	1997	158	2	11.281
2019_10_16	14:13:10	136	21.7	0.25	7.48	1997	158	1.85	11.215
2019_10_16	14:14:10	135	21.67	0.25	7.48	1989	157	2.11	11.226
2019_10_16	14:15:10	135	21.74	0.24	7.48	1982	158	1.85	11.217
2019_10_16	14:16:10	135	21.78	0.24	7.48	1978	158	1.9	11.403
2019_10_16	14:17:10	135	21.78	0.28	7.48	1974	158	2.16	11.486
2019_10_16	14:18:10	135	21.77	0.24	7.48	1982	158	1.78	11.419
2019_10_16	14:19:10	136	23.31	0.27	7.48	1969	155	1.95	11.384
2019_10_16	14:20:10	135	21.78	0.29	7.47	1957	155	2.1	11.33
2019_10_16	14:21:10	135	21.78	0.31	7.46	1962	156	1.95	11.092
2019_10_16	14:22:10	136	21.85	0.33	7.45	1954	156	2.21	11.719
2019_10_16	14:23:10	135	21.74	0.33	7.43	1946	155	1.95	11.292
2019_10_16	14:24:10	136	21.81	0.32	7.42	1948	157	2.05	11.04
2019_10_16	14:25:10	135	28.28	0.33	7.4	1937	157	2.26	11.321
2019_10_16	14:26:10	136	21.77	0.32	7.39	1946	158	2.05	11.168
2019_10_16	14:27:10	136	26.49	0.28	7.38	1934	157	2.21	11.105
2019_10_16	14:28:10	136	37.03	0.29	7.37	1941	158	2.36	11.151
2019_10_16	14:29:10	137	40.97	0.29	7.35	1934	157	2.1	10.853
2019_10_16	14:30:10	135	38.14	0.31	7.35	1939	158	2.21	11.024
2019_10_16	14:31:10	136	40.6	0.3	7.33	1936	158	2.42	11.343
2019_10_16	14:32:10	136	37.04	0.27	7.32	1934	160	2.05	11.201
2019_10_16	14:33:10	136	42.09	0.3	7.31	1933	160	2.05	11.042
2019_10_16	14:34:10	136	36.44	0.34	7.31	1926	162	2.16	10.903
2019_10_16	14:35:10	136	32.44	0.33	7.3	1927	162	2.36	11.115
2019_10_16	14:36:10	135	38.65	0.33	7.29	1929	161	2.05	10.845
2019_10_16	14:37:10	136	41.51	0.3	7.28	1926	162	2.26	11.178
2019_10_16	14:38:10	135	25.34	0.33	7.28	1938	162	2.31	10.735
2019_10_16	14:39:10	136	25.39	0.32	7.29	1954	162	2.21	10.89
2019_10_16	14:40:10	136	21.43	0.3	7.29	1946	161	2.41	11.51
2019_10_16	14:41:10	136	24.2	0.27	7.29	1931	161	2.16	11.228
2019_10_16	14:42:10	136	25.5	0.28	7.28	1918	161	2.58	11.031
2019_10_16	14:43:10	137	24.4	0.27	7.28	1918	162	2.1	10.739
2019_10_16	14:44:10	135	24.15	0.32	7.29	1912	162	2.42	11.353
2019_10_16	14:45:10	136	24.13	0.3	7.29	1903	160	2.16	11.409
2019_10_16	14:46:10	136	25.46	0.31	7.29	1897	160	2.21	11.041
2019_10_16	14:47:10	135	24.42	0.35	7.3	1893	159	2.31	11.545
2019_10_16	14:48:10	136	26.13	0.29	7.3	1892	160	2.11	11.227
2019_10_16	14:49:10	136	25.62	0.33	7.31	1890	159	2.21	11.63
2019_10_16	14:50:10	136	26.4	0.33	7.31	1887	160	1.95	11.783
2019_10_16	14:51:10	136	43.99	0.3	7.31	1897	160	1.84	11.756
2019_10_16	14:52:10	136	31.87	0.3	7.32	1902	158	1.9	11.62
2019_10_16	14:53:10	135	39.55	0.27	7.32	1891	158	1.95	11.601
2019_10_16	14:54:10	136	33.67	0.29	7.33	1892	158	1.9	12.036
2019_10_16	14:55:10	135	40.65	0.31	7.33	1883	160	1.95	11.886
2019_10_16	14:56:10	136	39.59	0.3	7.33	1885	160	1.95	11.395
2019_10_16	14:57:10	136	40.96	0.32	7.33	1877	159	2.05	11.466
2019_10_16	14:58:10	136	32.48	0.28	7.33	1875	160	1.95	11.286
2019_10_16	14:59:10	136	39.31	0.28	7.34	1869	160	2.05	11.962
2019_10_16	15:00:10	136	36.09	0.3	7.34	1862	158	1.95	11.464
2019_10_16	15:01:10	135	37.16	0.26	7.34	1871	160	2.05	11.511
2019_10_16	15:02:10	136	37.11	0.28	7.34	1863	159	2.05	11.874
2019_10_16	15:03:10	136	37.18	0.27	7.34	1859	158	2.01	11.467
2019_10_16	15:04:10	136	42.49	0.26	7.34	1849	158	2.05	11.565
2019_10_16	15:05:10	136	43.38	0.26	7.34	1853	159	2.16	11.603
2019_10_16	15:06:10	137	36.26	0.26	7.34	1851	159	2.21	11.64
2019_10_16	15:07:10	137	44.06	0.24	7.34	1919	159	2.16	12.223
2019_10_16	15:08:10	131	43.05	0.25	7.34	1963	159	2.11	12.173
2019_10_16	15:09:10	135	41.36	0.24	7.33	2004	161	2.21	11.461
2019_10_16	15:10:10	134	37.04	0.22	7.32	2018	159	1.84	11.264
2019_10_16	15:11:10	135	38.61	0.23	7.31	2028	159	1.78	10.656
2019_10_16	15:12:10	135	37.81	0.27	7.31	2023	158	1.78	10.866
2019_10_16	15:13:10	135	39.36	0.24	7.3	2018	162	1.9	10.773
2019_10_16	15:14:10	136	38.09	0.25	7.3	2010	159	1.78	10.867
2019_10_16	15:15:10	134	43.15	0.24	7.3	2008	159	1.78	11.448
2019_10_16	15:16:10	135	27.41	0.27	7.31	1994	160	1.78	11.605
2019_10_16	15:17:10	134	21.27	0.22	7.31	1993	159	1.85	11.328

PFAS Emissions Testing

Operations Data - 10/16/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	15:18:10	136	26.96	0.23	7.32	1986	159	1.85	11.479
2019_10_16	15:19:10	134	21.74	0.31	7.32	1981	159	1.78	11.646
2019_10_16	15:20:10	136	21.67	0.32	7.32	2001	160	1.78	11.281
2019_10_16	15:21:10	135	21.67	0.32	7.32	1999	160	1.78	11.286
2019_10_16	15:22:10	135	21.71	0.32	7.32	1987	162	1.84	11.119
2019_10_16	15:23:10	134	21.7	0.31	7.32	1988	159	1.73	11.204
2019_10_16	15:24:10	135	21.63	0.32	7.32	1985	162	1.85	11.622
2019_10_16	15:25:10	134	21.69	0.3	7.32	1990	160	1.78	11.101
2019_10_16	15:26:10	135	21.67	0.29	7.32	1986	162	1.84	10.994
2019_10_16	15:27:10	135	21.63	0.32	7.32	2008	162	1.78	11.38
2019_10_16	15:28:10	135	21.63	0.33	7.32	2027	160	1.9	11.066
2019_10_16	15:29:10	135	21.68	0.3	7.32	2010	159	1.85	11.639
2019_10_16	15:30:10	135	21.66	0.28	7.32	1998	162	1.85	11.056
2019_10_16	15:31:10	134	21.72	0.3	7.32	1992	162	1.68	11.023
2019_10_16	15:32:10	134	21.67	0.33	7.32	1985	163	1.84	10.78
2019_10_16	15:33:10	135	21.7	0.34	7.31	1977	160	1.9	10.839
2019_10_16	15:34:10	135	21.63	0.34	7.31	1975	162	1.78	10.868
2019_10_16	15:35:10	135	21.63	0.32	7.31	1978	159	1.9	11.485
2019_10_16	15:36:10	134	18.73	0.33	7.31	1969	159	1.79	10.971
2019_10_16	15:37:10	134	21.66	0.31	7.31	1969	159	1.73	11.673
2019_10_16	15:38:10	135	21.7	0.31	7.32	1957	159	1.9	11.329
2019_10_16	15:39:10	134	21.74	0.3	7.31	1955	159	1.78	11.046
2019_10_16	15:40:10	135	21.59	0.29	7.32	1950	158	1.9	11.279
2019_10_16	15:41:10	135	21.64	0.26	7.32	1950	160	1.9	11.134
2019_10_16	15:42:10	134	21.63	0.28	7.32	1948	159	1.85	11.161
2019_10_16	15:43:10	134	21.4	0.29	7.32	1945	159	2.05	11.096
2019_10_16	15:44:10	135	19.29	0.3	7.32	1937	159	1.95	11.21
2019_10_16	15:45:10	136	21.6	0.29	7.32	1929	158	1.95	11.076
2019_10_16	15:46:10	134	21.67	0.26	7.32	1918	159	2.05	11.553
2019_10_16	15:47:10	134	21.64	0.31	7.32	1923	159	1.95	11.27
2019_10_16	15:48:10	134	21.64	0.33	7.33	1924	159	2.05	11.633
2019_10_16	15:49:10	135	22.05	0.32	7.33	1932	160	2.16	11.116
2019_10_16	15:50:10	134	21.51	0.31	7.33	1929	158	2.05	11.287
2019_10_16	15:51:10	135	21.63	0.28	7.33	1927	159	2	10.966
2019_10_16	15:52:10	134	21.53	0.28	7.33	1927	162	2.1	11.163
2019_10_16	15:53:10	135	20.36	0.3	7.33	1926	162	2.01	11.185
2019_10_16	15:54:10	135	20.86	0.29	7.34	1926	162	2.11	11.445
2019_10_16	15:55:10	135	21.66	0.28	7.34	1924	159	2.05	11.213
2019_10_16	15:56:10	134	21.59	0.27	7.33	1917	159	2.05	11.178
2019_10_16	15:57:10	135	18.77	0.26	7.34	1916	159	2.05	11.452
2019_10_16	15:58:10	135	21.04	0.26	7.34	1920	160	1.95	11.354
2019_10_16	15:59:10	134	21.72	0.23	7.35	1923	160	2.1	11.252
2019_10_16	16:00:10	134	21.68	0.25	7.35	1919	162	2.16	11.308
2019_10_16	16:01:10	134	19.78	0.25	7.35	1923	160	2.11	11.726
2019_10_16	16:02:10	134	21.43	0.27	7.35	1931	158	2.21	11.812
2019_10_16	16:03:10	134	17.57	0.23	7.36	1924	160	2.1	11.804
2019_10_16	16:04:10	134	17.88	0.22	7.35	1922	159	2.1	11.548
2019_10_16	16:05:10	135	21.76	0.28	7.36	1920	160	2.16	11.614
2019_10_16	16:06:10	135	21.79	0.29	7.36	1920	160	2.05	11.368
2019_10_16	16:07:10	134	22.06	0.27	7.35	1918	162	2.16	11.754
2019_10_16	16:08:10	134	20.77	0.21	7.35	1907	160	2.11	11.483
2019_10_16	16:09:10	134	20.32	0.24	7.35	1916	163	2.11	11.982
2019_10_16	16:10:10	133	18.38	0.22	7.36	1911	163	2.11	11.825
2019_10_16	16:11:10	135	18.51	0.24	7.36	1901	163	2.21	11.571
2019_10_16	16:12:10	134	18.44	0.22	7.35	1909	160	2.21	11.213
2019_10_16	16:13:10	134	22.47	0.23	7.35	1902	160	2.31	11.491
2019_10_16	16:14:10	134	20.73	0.24	7.36	1906	160	2.21	11.363
2019_10_16	16:15:10	134	18.98	0.23	7.36	1902	162	2.36	11.594
2019_10_16	16:16:10	134	21.75	0.23	7.36	1897	159	2.21	11.196
2019_10_16	16:17:10	135	20.53	0.24	7.36	1891	160	2.21	11.466
2019_10_16	16:18:10	134	21.72	0.25	7.36	1886	160	2.16	11.314
2019_10_16	16:19:10	134	18.69	0.23	7.37	1883	160	2.31	11.534
2019_10_16	16:20:10	133	21.9	0.24	7.37	1883	160	2.26	11.423
2019_10_16	16:21:10	134	18.71	0.24	7.36	1882	160	2.31	11.414
2019_10_16	16:22:10	134	17.84	0.24	7.36	1882	160	2.21	11.433
2019_10_16	16:23:10	135	18	0.23	7.37	1872	160	2.31	11.699

PFAS Emissions Testing

Operations Data - 10/16/2019

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	16:24:10	133	17.84	0.27	7.37	1867	160	2.21	11.441
2019_10_16	16:25:10	134	17.83	0.33	7.37	1882	160	2.26	11.623
2019_10_16	16:26:10	134	22.22	0.3	7.37	1882	160	2.31	12.119
2019_10_16	16:27:10	134	21.46	0.31	7.37	1874	160	2.26	11.723
2019_10_16	16:28:10	134	21.82	0.28	7.37	1873	158	2.31	11.826
2019_10_16	16:29:10	134	22.26	0.28	7.37	1867	160	2.26	12.124
2019_10_16	16:30:10	134	22.06	0.29	7.37	1887	159	2.42	11.452
2019_10_16	16:31:10	134	21.68	0.31	7.36	1941	159	2.42	11.442
2019_10_16	16:32:10	134	21.82	0.29	7.35	1985	160	2.52	11.332
2019_10_16	16:33:10	134	19.35	0.27	7.33	1996	157	2.16	11.13
2019_10_16	16:34:10	134	21.24	0.24	7.32	2000	158	2.16	10.947
2019_10_16	16:35:10	134	21.05	0.26	7.32	2013	158	2.05	11.433
2019_10_16	16:36:10	134	19.04	0.23	7.31	2015	159	2.05	11.419
2019_10_16	16:37:10	134	21.86	0.24	7.31	2022	159	2.01	11.134
2019_10_16	16:38:10	134	19.36	0.25	7.3	2015	158	2.01	11.496
2019_10_16	16:39:10	133	21.87	0.24	7.3	2016	158	2.11	10.926
2019_10_16	16:40:10	135	18.15	0.24	7.29	2013	159	2.01	10.942
2019_10_16	16:41:10	135	21.86	0.25	7.29	2008	158	2.05	11.183
2019_10_16	16:42:10	134	21.86	0.27	7.29	2002	159	2.11	11.013
2019_10_16	16:43:10	134	21.79	0.25	7.29	2012	159	2.01	11.086
2019_10_16	16:44:10	134	22.04	0.25	7.28	1998	158	2.01	11.438
2019_10_16	16:45:10	134	21.82	0.25	7.28	2004	158	2.05	11.129
2019_10_16	16:46:10	134	17.56	0.25	7.28	2004	158	1.9	11.24

Appendix D
Laboratory Reports

PFAS EMISSIONS - Blank Results

INCLUDES BLANKS NOT USED FOR AST ANALYSIS

Analyte	A-6601, 6602 QC M0010 FH BT #1 ng/sample	A-6603, 6604 QC M0010 BH BT #1 ng/sample	A-6605 QC M0010 IMP 1,2,&3 COND BT #1 ng/sample	A-6606 QC M0010 IMP GLSWRE MEOH RINSE BT #1 ng/sample	A-6607 QC M0010 BRKTHRGH XAD-2 RSN TB BT #1 ng/sample	A-6615 QC M0100 XAD-2 RSN TB TB ng/sample	A-6616 QC M0010 CMBD GLSWRE RINSES (MEOH/5%NH4OH) PB ng/sample	A-6617 QC M0010 DI WATER RB ng/sample
Perfluorobutanoic acid (PFBA)	ND	10.5	2.0	ND	9.3	9.02	1.15	1.52
Perfluoropentanoic acid (PFPeA)	ND	1.8	ND	ND	2	1.86	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	55.1	ND	ND	52.6	50.2	ND	ND
Perfluoroheptanoic acid (PFHpA)	ND	84.1	ND	ND	80.8	74.4	ND	ND
Perfluorooctanoic acid (PFOA)	1.06	32.7	ND	ND	29.3	32.2	ND	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	28.5	ND	ND	26.2	24.5	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	7.47	ND	ND	6.91	5.74	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	1.87	ND	ND	1.63	1.88	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	5.19	ND	ND	5.53	4.07	ND	ND
F-53B Major	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

RL= Reporting Limit

BT= Blank Train

RB= Reagent Blank

MS= Matrix Spike

MSD= Matrix Spike Duplicate

PB= Proof Blank

TB= Trip Blank

RE= Re-extraction

PFAS EMISSIONS - Blank Results

INCLUDES BLANKS NOT USED FOR AST ANALYSIS

Analyte	A-6618 QC M0010MEOH W/5% NH4OH RB ng/sample	A-6905 MEDIA CHECK XAD ng/sample	A-6906 MEDIA CHECK FILTER ng/sample	FH RL ng/sample	FH RL X2 ng/sample	BH RL ng/sample	BH RL X2 ng/sample	COND RL ng/sample	COND RL X2 ng/sample
Perfluorobutanoic acid (PFBA)	1.1	2.56	ND	0.76	1.26	2.14	2.74	0.67	1.03
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	0.571	1.11	0.669	1.16	0.538	0.994
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	0.672	1.18	0.802	1.27	0.623	1
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	0.624	1.07	0.837	1.21	0.549	0.982
Perfluorooctanoic acid (PFOA)	ND	ND	ND	1.01	1.45	0.642	1.08	0.654	1.25
Perfluorononanoic acid (PFNA)	ND	ND	ND	0.574	1.14	0.589	1	0.546	1.1
Perfluorodecanoic acid (PFDA)	ND	ND	ND	0.594	1.15	0.594	1.07	0.566	1.13
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	0.67	1.18	0.68	1.06	0.633	1.12
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	0.512	1.16	0.515	0.974	0.554	0.967
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	0.554	1.14	0.508	0.908	0.52	0.968
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	0.639	1.13	0.568	0.881	0.556	1.14
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	0.913	0.579	1	ND	0.615
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	0.93	0.689	1.09	ND	0.833
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	0.528	0.976	0.586	1.08	0.546	0.901
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	0.496	1.05	0.534	1.06	ND	0.936
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	0.506	1.03	0.596	0.927	0.492	0.948
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	0.495	1.01	0.527	0.913	ND	0.93
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	1.06	ND	0.819	ND	0.935
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	0.549	1.18	0.586	1.06	0.619	1.05
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	0.516	1.26	ND	0.91	0.548	0.939
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	0.58	1.34	0.53	0.876	ND	0.942
4:2 FTS	ND	ND	ND	0.507	1	ND	0.821	ND	0.904
6:2 FTS	ND	ND	ND	0.563	1.05	0.532	0.948	0.648	1.24
8:2 FTS	ND	ND	ND	ND	1.1	ND	0.947	0.589	1.13
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	0.503	1.09	0.572	1.2	ND	0.93
HFPO-DA (GenX)	1.03	ND	ND	1.68	1.63	1.18	1.43	1.02	1.41
F-53B Major	ND	ND	ND	ND	1.08	ND	0.832	ND	0.842
F-53B Minor	ND	ND	ND	ND	0.973	ND	0.81	ND	0.961

M0010 XAD-2 Resin Tube

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MSD= Matrix Spike Duplicate

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TB= Trip Blank

RE= Re-extraction

PFAS EMISSIONS - Blank Results

INCLUDES BLANKS NOT USED FOR AST ANALYSIS

Analyte	A-6608,6609 QC M0010 FH BT #2 ng/sample	A-6608,6609 QC M0010 FH BT #2 RE ng/sample	A-6610, 6611 QC M0010 BH BT #2 ng/sample	A-6610, 6611 QC M0010 BH BT #2 RE ng/sample	A-6612 QC M0010 IMP 1,2&3 COND BT #2 ng/sample	A-6612 QC M0010 IMP 1,2&3 COND BT #2 ng/sample	A-6613 QC M0010 IMP GLSWRE MEOH RINSE BT #2 ng/sample	A-6614 QC M0010 BRKTHRGH XAD-2 RESIN TB BT #2 ng/sample
Perfluorobutanoic acid (PFBA)	1.77	7.47	2.8	10.4	3.15	8.27*	1.11	1.66
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	1.9	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	ND	ND	4.51	51.4	ND	ND	ND	3.04
Perfluoroheptanoic acid (PFHpA)	ND	ND	6.27	77.4	ND	ND	ND	4.37
Perfluorooctanoic acid (PFOA)	ND	ND	4.59	25.7	ND	5.42*	ND	4.69
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	ND	ND	2.73	27.4	ND	ND	ND	2.37
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	5.52	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	1.15	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	ND	ND	ND	2.24	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	11.7	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	1.77	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	1.41	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	1.68	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	3.75	35.1	ND	18.2	ND	16*	ND	39
F-53B Major	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

*Sample prepped / analyzed beyond specific holding time not included

RL= Reporting Limit

BT= Blank Train

RB= Reagent Blank

MS= Matrix Spike

MSD= Matrix Spike Duplicate

PB= Proof Blank

TB= Trip Blank

RE= Re-extraction

PFAS EMISSIONS - Blank Results

INCLUDES BLANKS NOT USED FOR AST ANALYSIS

Analyte	A-6614 QC M0010 BRKTHRGH XAD-2 RESIN TB BT #2 RE ng/sample	D-2356 QC M0010 XAD-2 RESIN TB TB ng/sample	D-2356 QC M0010 XAD-2 RESIN TB TB RE ng/sample	D-2357 QC M0010 CMBND GLSWRE RINSES (MEOH/5% NH4OH) PB ng/sample	D-2358 QC M0010 DI WATER RB ng/sample	D-2358 QC M0010 DI WATER RB ng/sample	D-2360 QC M0010 MEOH W/5% NH4OH RB ng/sample
Perfluorobutanoic acid (PFBA)	10.4	2.84	4.33	1.71	ND	5.59	ND
Perfluoropentanoic acid (PFPeA)	1.64	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	42.1	ND	2.19	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)	63.3	ND	2.24	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	21.3	1.09	1.36	ND	ND	3.98	ND
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)	22	ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	4.77	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	ND	ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	2.03	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	19.1	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	1.43	ND	ND	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	123	29.4	119	ND	5.8	29.1	ND
F-53B Major	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND

M0010 XAD-2 Resin Tube

RL= Reporting Limit

BT= Blank Train

RB= Reagent Blank

MS= Matrix Spike

MSD= Matrix Spike Duplicate

PB= Proof Blank

TB= Trip Blank

RE= Re-extraction

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ANALYTICAL REPORT

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Laboratory Job ID: 140-17067-1
Client Project/Site: M0010 Field Samples (MeOH)
Revision: 1

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 1:30:20 PM

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The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified 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.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17067-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17067-1

Sample Receipt

The samples were received on October 19, 2019 at 9:30 AM in good condition and properly preserved. The temperatures of the 4 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C and 5.5º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS for the following sample: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The method blank for preparation batch 320-336962, 320-337396 and 320-338209 and analytical batch 320-340564 contained Perfluorooctanoic acid (PFOA) above the reporting limit (RL). There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332801, 320-333704 and 320-341442 and analytical batch 320-342900 recovered outside control limits for several analytes. Sample re-extraction and reanalysis was not possible due to insufficient sample; therefore, the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 and analytical batch 320-342895 recovered outside control limits for all the analytes. The LCS was reanalyzed with concurring results. The data have been reported with low bias results.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Due to insufficient sample re-extraction and/or re-analysis of samples were not performed. The method blank was re-analyzed with concurring results; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained HFPO-DA (GenX) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA), HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA) above the reporting limit (RL). None of the samples associated with this method blank contained the target

Job ID: 140-17067-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 and analytical batch 320-342657 recovered outside control limits for several analytes. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported with possible low bias.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10) and E-1328,1329 R4 M0010 BH (140-17067-17)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-6:2 FTS is above the method recommended limit for the following sample: A-6621,6622 R6 M0010 BH (140-17067-27). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The method blank for preparation batch 320-336904, 320-338182 and 320-338718 and analytical batch 320-343208 contained Perfluorobutanoic acid (PFBA) above the method reporting limit (RL). Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample volume.

Method 537 (modified): The method blank for preparation batch 320-336904, 320-338182 and 320-338718 and analytical batch 320-347688 contained Perfluorobutanoic acid (PFBA) above the method reporting limit (RL). Sample re-extraction and/or re-analysis was not performed due to insufficient sample volume.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample for M2-4:2 FTS: E-1307,1308 R1 M0010 BH (140-17067-2) and E-1321,1322 R3 M0010 BH (140-17067-12). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the following sample M2-4:2 FTS and M2-6:2 FTS: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-5) and E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-15). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Surrogate recovery for 13C8 PFOA in the following continuing calibration verification was outside control limits: (CCV 320-349852/15). The surrogate recovery was biased high and all the associated samples were ND for this surrogate due to the possibility of not being spiked into the samples.

Method 537 (modified): Surrogate recoveries for the following samples was zero: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3), E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13) and A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23). It appears the samples were not spiked with surrogate compounds.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3), E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13) and A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23).

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

Comments

Job ID: 140-17067-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanoic acid (PFOA)	**2.65**	**H B**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorononanoic acid (PFNA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorodecanoic acid (PFDA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
4:2 FTS	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
6:2 FTS	**1.80**	**H**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
8:2 FTS	**4.89**	**H**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
HFPO-DA (GenX)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
F-53B Major	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
F-53B Minor	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C5 PFPeA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFHxA	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFHpA	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFOA	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C5 PFNA	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFDA	*107*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFUnA	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFDoA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
18O2 PFHxS	*111*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFOS	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C8 FOSA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
d3-NMeFOSAA	*68*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
d5-NEtFOSAA	*111*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	144		25 - 150	11/08/19 14:30	11/21/19 21:11	1
M2-8:2 FTS	167	*	25 - 150	11/08/19 14:30	11/21/19 21:11	1
M2-4:2 FTS	129		25 - 150	11/08/19 14:30	11/21/19 21:11	1
13C3 HFPO-DA	83		25 - 150	11/08/19 14:30	11/21/19 21:11	1

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.48**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoropentanoic acid (PFPeA)	**2.07**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorohexanoic acid (PFHxA)	**52.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroheptanoic acid (PFHpA)	**77.9**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanoic acid (PFOA)	**28.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorodecanoic acid (PFDA)	**26.5**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorobutanesulfonic acid (PFBS)	**6.66**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanesulfonic acid (PFOS)	**1.79**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
HFPO-DA (GenX)	**2.65**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	52		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C5 PFPeA	60		25 - 150	11/08/19 14:30	12/20/19 20:27	1

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C4 PFHpA	*76*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C4 PFOA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C5 PFNA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C2 PFDA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C2 PFUnA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C2 PFDoA	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C2 PFTeDA	*77*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
18O2 PFHxS	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C4 PFOS	*90*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C8 FOSA	*53*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
M2-6:2 FTS	*150*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
M2-4:2 FTS	*156*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C3 HFPO-DA	*77*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*103*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*
13C8 PFOS	*85*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:27*	*1*

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanoic acid (PFOA)	**1.69**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
HFPO-DA (GenX)	**1.56**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*114*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C5 PFPeA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFHxA	*115*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFHpA	*124*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFOA	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C5 PFNA	*128*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFDA	*124*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFUnA	*126*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFDoA	*132*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFTeDA	*127*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
18O2 PFHxS	*135*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFOS	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C8 FOSA	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
d3-NMeFOSAA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
d5-NEtFOSAA	*118*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-6:2 FTS	*176*	*	*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-8:2 FTS	*135*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C3 HFPO-DA	*121*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.05*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 14:58*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 14:58*	*1*

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.03**	**J H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C5 PFPeA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFHpA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFDoA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
18O2 PFHxS	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C8 FOSA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
d5-NEtFOSAA	*109*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
M2-6:2 FTS	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
M2-8:2 FTS	*94*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	88		25 - 150	11/08/19 14:30	12/06/19 08:43	1
13C3 HFPO-DA	87		25 - 150	11/08/19 14:30	12/06/19 08:43	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.02	X	50 - 150	11/08/19 14:30	01/23/20 11:58	1
13C8 PFOS	0	X	50 - 150	11/08/19 14:30	01/23/20 11:58	1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.83**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoropentanoic acid (PFPeA)	**1.90**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorohexanoic acid (PFHxA)	**50.2**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroheptanoic acid (PFHpA)	**71.7**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanoic acid (PFOA)	**25.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorodecanoic acid (PFDA)	**25.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorobutanesulfonic acid (PFBS)	**5.99**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanesulfonic acid (PFOS)	**1.85**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
HFPO-DA (GenX)	**4.59**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C5 PFPeA	*72*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C2 PFHxA	*94*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C4 PFOA	*104*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C5 PFNA	*101*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C2 PFDA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C2 PFUnA	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C2 PFDoA	*96*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C4 PFOS	*94*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C8 FOSA	*94*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
d3-NMeFOSAA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
M2-6:2 FTS	*182*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
M2-4:2 FTS	*185*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C3 HFPO-DA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*129*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*
13C8 PFOS	*92*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:37*	*1*

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanoic acid (PFOA)	**2.67**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
8:2 FTS	**1.31**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
HFPO-DA (GenX)	**1.45**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C5 PFPeA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFHpA	*100*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFOA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C5 PFNA	*100*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFDA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFUnA	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
18O2 PFHxS	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFOS	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
d5-NEtFOSAA	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-6:2 FTS	*124*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-8:2 FTS	*124*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-4:2 FTS	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.11**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoropentanoic acid (PFPeA)	**1.67**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorohexanoic acid (PFHxA)	**45.7**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**74.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanoic acid (PFOA)	**26.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorodecanoic acid (PFDA)	**24.3**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorobutanesulfonic acid (PFBS)	**5.75**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.60**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
HFPO-DA (GenX)	**2.78**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C5 PFPeA	*60*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFHxA	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFHpA	*71*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFOA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C5 PFNA	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFDA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFUnA	*83*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFDoA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFTeDA	*67*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
18O2 PFHxS	*83*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C8 FOSA	*52*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
d3-NMeFOSAA	*79*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
M2-6:2 FTS	*139*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12
Matrix: Air

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	164	*	25 - 150	11/08/19 14:30	12/20/19 20:47	1
13C3 HFPO-DA	60		25 - 150	11/08/19 14:30	12/20/19 20:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	98		50 - 150	11/08/19 14:30	12/20/19 20:47	1
13C8 PFOS	84		50 - 150	11/08/19 14:30	12/20/19 20:47	1

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13
Matrix: Air

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanoic acid (PFOA)	**1.73**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanesulfonamide (FOSA)	**1.73**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
6:2 FTS	**1.53**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
HFPO-DA (GenX)	**2.79**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	11/07/19 13:00	11/17/19 00:42	1

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	101		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFHxA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFHpA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFOA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C5 PFNA	114		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFDA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFUnA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFTeDA	114		25 - 150	11/07/19 13:00	11/17/19 00:42	1
18O2 PFHxS	121		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFOS	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C8 FOSA	107		25 - 150	11/07/19 13:00	11/17/19 00:42	1
d3-NMeFOSAA	91		25 - 150	11/07/19 13:00	11/17/19 00:42	1
d5-NEtFOSAA	89		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-6:2 FTS	130		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-8:2 FTS	113		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-4:2 FTS	125		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C3 HFPO-DA	96		25 - 150	11/07/19 13:00	11/17/19 00:42	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.09	X	50 - 150	11/07/19 13:00	01/09/20 15:18	1
13C8 PFOS	0	X	50 - 150	11/07/19 13:00	01/09/20 15:18	1

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.20**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFHxA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFHpA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C5 PFNA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFUnA	*87*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFDoA	*96*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFTeDA	*100*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
d5-NEtFOSAA	*108*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C3 HFPO-DA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.01*	*X*	*50 - 150*	*11/08/19 14:30*	*01/23/20 12:08*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/08/19 14:30*	*01/23/20 12:08*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.38**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoropentanoic acid (PFPeA)	**1.80**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorohexanoic acid (PFHxA)	**51.3**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoroheptanoic acid (PFHpA)	**77.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanoic acid (PFOA)	**25.5**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorodecanoic acid (PFDA)	**25.1**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorobutanesulfonic acid (PFBS)	**6.62**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanesulfonic acid (PFOS)	**1.92**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
HFPO-DA (GenX)	**3.16**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*62*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C5 PFPeA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFHxA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFHpA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFOA	*100*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C5 PFNA	*90*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFDA	*87*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFUnA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFDoA	*94*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
18O2 PFHxS	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFOS	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C8 FOSA	*87*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d3-NMeFOSAA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-6:2 FTS	*174*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-4:2 FTS	*165*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C3 HFPO-DA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*122*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C8 PFOS	*84*		*50 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanoic acid (PFOA)	**2.27**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
8:2 FTS	**1.66**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
HFPO-DA (GenX)	**1.25**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C5 PFPeA	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFHxA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C4 PFHpA	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C4 PFOA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C5 PFNA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFDA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFUnA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFDoA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-8:2 FTS	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-4:2 FTS	*109*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C3 HFPO-DA	*84*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.48**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorohexanoic acid (PFHxA)	**1.38**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanoic acid (PFOA)	**1.74**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22
Matrix: Air
Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
HFPO-DA (GenX)	**2.26**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C5 PFPeA	*66*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFHxA	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFHpA	*74*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFOA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C5 PFNA	*65*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFDA	*55*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFUnA	*55*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFDoA	*54*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFTeDA	*50*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
18O2 PFHxS	*69*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFOS	*59*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C8 FOSA	*25*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
d3-NMeFOSAA	*52*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
d5-NEtFOSAA	*51*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-8:2 FTS	*57*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C3 HFPO-DA	*70*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*89*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C8 PFOS	*58*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23
Matrix: Air
Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.77**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-23
Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
HFPO-DA (GenX)	**1.02**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C5 PFPeA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFHxA	*102*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFHpA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFOA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C5 PFNA	*114*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFDA	*112*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFUnA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFDoA	*118*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFTeDA	*117*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFOS	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C8 FOSA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-6:2 FTS	*126*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-8:2 FTS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-4:2 FTS	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C3 HFPO-DA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.03	X	50 - 150	11/07/19 13:00	01/09/20 15:38	1
13C8 PFOS	0.005	X	50 - 150	11/07/19 13:00	01/09/20 15:38	1

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
HFPO-DA (GenX)	**2.63**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150	11/08/19 14:30	12/06/19 10:13	1
13C5 PFPeA	94		25 - 150	11/08/19 14:30	12/06/19 10:13	1
13C2 PFHxA	99		25 - 150	11/08/19 14:30	12/06/19 10:13	1
13C4 PFHpA	95		25 - 150	11/08/19 14:30	12/06/19 10:13	1

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C5 PFNA	*96*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFDA	*94*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFUnA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
18O2 PFHxS	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C4 PFOS	*91*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C8 FOSA	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
d3-NMeFOSAA	*109*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
d5-NEtFOSAA	*116*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
M2-8:2 FTS	*108*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
M2-4:2 FTS	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C3 HFPO-DA	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.02*	*X*	*50 - 150*	*11/08/19 14:30*	*01/23/20 12:18*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/08/19 14:30*	*01/23/20 12:18*	*1*

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.35**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorohexanoic acid (PFHxA)	**1.10**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanoic acid (PFOA)	**2.32**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
HFPO-DA (GenX)	**5.26**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*71*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C5 PFPeA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C2 PFHxA	*83*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C4 PFHpA	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C4 PFOA	*88*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C5 PFNA	*74*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C2 PFDA	*69*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C2 PFUnA	*68*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C2 PFDoA	*68*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C2 PFTeDA	*61*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
18O2 PFHxS	*67*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C4 PFOS	*60*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C8 FOSA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
d3-NMeFOSAA	*66*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
M2-6:2 FTS	*118*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
M2-8:2 FTS	*69*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
M2-4:2 FTS	*126*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C3 HFPO-DA	*79*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*111*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*
13C8 PFOS	*65*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:17*	*1*

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	13C8PFOA (50-150)	PFOS (50-150)										
140-17067-2	E-1307,1308 R1 M0010 BH	103	85										
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	0.05 X	0 X										
140-17067-4 - RA	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	0.02 X	0 X										
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	129	92										
140-17067-12	E-1321,1322 R3 M0010 BH	98	84										
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	0.09 X	0 X										
140-17067-14 - RA	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	0.01 X	0 X										
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	122	84										
140-17067-22	A-6614,6615 R5 M0010 BH	89	58										
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	0.03 X	0.005 X										
140-17067-24 - RA	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	0.02 X	0 X										
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	111	65										

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17067-1	E-1305,1306 R1 M0010 FH	103	101	108	106	108	106	107	110
140-17067-2	E-1307,1308 R1 M0010 BH	52	60	84	76	91	84	78	86
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	114	111	115	124	120	128	124	126
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	90	86	91	90	93	88	89	89
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	65	72	94	92	104	101	84	92
140-17067-11	E-1319,1320 R3 M0010 FH	92	94	98	100	98	100	98	103
140-17067-12	E-1321,1322 R3 M0010 BH	49	60	80	71	84	81	73	83
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	99	101	108	108	108	114	109	109
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	86	85	90	88	92	89	86	87
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	62	73	93	85	100	90	87	93
140-17067-21	A-6612,6613 R5 M0010 FH	91	90	95	97	96	96	94	99
140-17067-22	A-6614,6615 R5 M0010 BH	65	66	81	74	78	65	55	55
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	100	98	102	113	111	114	112	111
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	95	94	99	95	97	96	94	98
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	71	73	83	80	88	74	69	68
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-336904/2-C	Lab Control Sample	102	98	103	103	97	93	94	91
LCS 320-336904/2-C	Lab Control Sample	99	97	98	100	97	99	86	96
LCS 320-336904/3-C	Lab Control Sample	101	94	103	102	96	92	94	88
LCS 320-336904/3-C	Lab Control Sample	85	85	92	87	90	86	73	82
LCS 320-336904/4-C	Lab Control Sample	99	95	101	96	94	91	94	90
LCS 320-336904/4-C	Lab Control Sample	89	86	89	93	93	85	77	84
LCS 320-336962/2-C	Lab Control Sample	97	96	99	106	103	101	100	105
LCS 320-336962/3-C	Lab Control Sample	95	95	98	105	100	96	99	101
LCS 320-336962/4-C	Lab Control Sample	96	94	100	103	100	98	98	101
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-336904/1-C	Method Blank	96	91	98	100	93	88	90	87
MB 320-336904/1-C	Method Blank	86	85	89	91	93	91	77	86
MB 320-336962/1-C	Method Blank	98	94	104	105	102	98	97	101

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-1	E-1305,1306 R1 M0010 FH	99	104	111	98	99	68	111	144
140-17067-2	E-1307,1308 R1 M0010 BH	92	77	85	90	53	75	92	150
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	132	127	135	120	120	106	118	176 *
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	97	98	89	84	88	102	109	89

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-5	E-1311 R1 M0010 BREAKTHRC	96	89	101	94	94	73	103	182 *
140-17067-11	E-1319,1320 R3 M0010 FH	102	90	106	91	89	93	110	124
140-17067-12	E-1321,1322 R3 M0010 BH	86	67	83	85	52	79	85	139
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	109	114	121	108	107	91	89	130
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	96	100	88	85	89	98	108	92
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	94	78	85	86	87	89	102	174 *
140-17067-21	A-6612,6613 R5 M0010 FH	99	94	101	89	89	88	101	112
140-17067-22	A-6614,6615 R5 M0010 BH	54	50	69	59	25	52	51	97
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	118	117	116	107	106	93	100	126
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	104	104	92	91	93	109	116	103
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	68	61	67	60	73	66	72	118
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-336904/2-C	Lab Control Sample	100	98	103	86	79	87	93	114
LCS 320-336904/2-C	Lab Control Sample	97	94	99	94	86	101	109	133
LCS 320-336904/3-C	Lab Control Sample	93	88	96	79	75	85	93	104
LCS 320-336904/3-C	Lab Control Sample	82	83	77	76	73	83	91	108
LCS 320-336904/4-C	Lab Control Sample	95	94	94	82	77	85	95	103
LCS 320-336904/4-C	Lab Control Sample	89	85	84	83	80	87	96	115
LCS 320-336962/2-C	Lab Control Sample	108	102	112	94	93	92	102	96
LCS 320-336962/3-C	Lab Control Sample	104	97	109	92	92	88	103	93
LCS 320-336962/4-C	Lab Control Sample	103	100	105	96	95	93	101	89
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-336904/1-C	Method Blank	93	90	89	78	78	80	91	105
MB 320-336904/1-C	Method Blank	88	88	80	81	78	89	100	127
MB 320-336962/1-C	Method Blank	102	98	109	97	96	93	104	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)					
140-17067-1	E-1305,1306 R1 M0010 FH	167 *	129	83					
140-17067-2	E-1307,1308 R1 M0010 BH	103	156 *	77					
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	135	131	121					
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	94	88	87					
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	100	185 *	89					
140-17067-11	E-1319,1320 R3 M0010 FH	124	108	76					
140-17067-12	E-1321,1322 R3 M0010 BH	90	164 *	60					
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	113	125	96					
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	93	90	97					

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17067-15	E-1325 R3 M0010 BREAKTHRC	92	165 *	91
140-17067-21	A-6612,6613 R5 M0010 FH	110	109	84
140-17067-22	A-6614,6615 R5 M0010 BH	57	131	70
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	116	103	103
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	108	97	93
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	69	126	79
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112
LCS 320-336668/4-B	Lab Control Sample	98	90	118
LCS 320-336904/2-C	Lab Control Sample	107	125	85
LCS 320-336904/2-C	Lab Control Sample	99	147	93
LCS 320-336904/3-C	Lab Control Sample	97	109	94
LCS 320-336904/3-C	Lab Control Sample	79	115	81
LCS 320-336904/4-C	Lab Control Sample	106	108	83
LCS 320-336904/4-C	Lab Control Sample	88	126	90
LCS 320-336962/2-C	Lab Control Sample	90	98	86
LCS 320-336962/3-C	Lab Control Sample	84	99	91
LCS 320-336962/4-C	Lab Control Sample	80	95	85
MB 320-336668/1-B	Method Blank	84	93	113
MB 320-336904/1-C	Method Blank	109	110	81
MB 320-336904/1-C	Method Blank	80	117	84
MB 320-336962/1-C	Method Blank	83	96	91

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
18O2 PFHxS	*124*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOS	*108*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C8 FOSA	*105*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-8:2 FTS	84		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-4:2 FTS	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C3 HFPO-DA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	108		25 - 150
13C2 PFHxA	107		25 - 150
13C4 PFHpA	112		25 - 150
13C4 PFOA	109		25 - 150
13C5 PFNA	112		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	112		25 - 150
13C2 PFDoA	116		25 - 150
13C2 PFTeDA	119		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	111		25 - 150
13C8 FOSA	104		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	100		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	106		25 - 150

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.775		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.955		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.584		ng/Sample		92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.746		ng/Sample		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.117		ng/Sample		96	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.036		ng/Sample		97	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.134		ng/Sample		95	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.489		ng/Sample		98	68 - 128

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	10.0	9.940		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	9.906		ng/Sample		99	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.768		ng/Sample		98	65 - 125
4:2 FTS	9.34	9.915		ng/Sample		106	70 - 130
6:2 FTS	9.48	9.822		ng/Sample		104	66 - 126
8:2 FTS	9.58	9.688		ng/Sample		101	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.698		ng/Sample		103	70 - 130
HFPO-DA (GenX)	10.0	10.60		ng/Sample		106	70 - 130
F-53B Major	9.32	9.194		ng/Sample		99	70 - 130
F-53B Minor	9.42	9.238		ng/Sample		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	9.275		ng/Sample		93	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	8.145		ng/Sample		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.875		ng/Sample		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	8.135		ng/Sample		89	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.753		ng/Sample		102	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.139		ng/Sample		98	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.030		ng/Sample		94	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.069		ng/Sample		94	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.913		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.16		ng/Sample		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.50		ng/Sample		105	65 - 125
4:2 FTS	9.34	10.04		ng/Sample		108	70 - 130
6:2 FTS	9.48	9.599		ng/Sample		101	66 - 126
8:2 FTS	9.58	10.33		ng/Sample		108	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	10.05		ng/Sample		107	70 - 130
HFPO-DA (GenX)	10.0	10.37		ng/Sample		104	70 - 130
F-53B Major	9.32	9.671		ng/Sample		104	70 - 130
F-53B Minor	9.42	8.429		ng/Sample		89	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*99*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	*98*		*25 - 150*
M2-4:2 FTS	*90*		*25 - 150*
13C3 HFPO-DA	*118*		*25 - 150*

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.053		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*96*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFPeA	*91*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFHpA	*100*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	90		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFUnA	87		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFDoA	93		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFTeDA	90		25 - 150	11/08/19 14:30	12/04/19 19:44	1
18O2 PFHxS	89		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C4 PFOS	78		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C8 FOSA	78		25 - 150	11/08/19 14:30	12/04/19 19:44	1
d3-NMeFOSAA	80		25 - 150	11/08/19 14:30	12/04/19 19:44	1
d5-NEtFOSAA	91		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-6:2 FTS	105		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-8:2 FTS	109		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-4:2 FTS	110		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C3 HFPO-DA	81		25 - 150	11/08/19 14:30	12/04/19 19:44	1

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.063		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFHxA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFDA	*77*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFUnA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFDoA	*88*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
18O2 PFHxS	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFOS	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C8 FOSA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-6:2 FTS	*127*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-8:2 FTS	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-4:2 FTS	*117*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C3 HFPO-DA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.81		ng/Sample		102	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.58		ng/Sample		99	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.91		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.44		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	42.65		ng/Sample		107	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	40.36		ng/Sample		101	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.20		ng/Sample		96	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.20		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.76		ng/Sample		95	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.87		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.78		ng/Sample		93	60 - 140

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.76		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.56		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	41.49		ng/Sample		108	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.70		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	45.17		ng/Sample		113	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.68		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.56		ng/Sample		106	60 - 140
4:2 FTS	37.4	40.72		ng/Sample		109	60 - 140
6:2 FTS	37.9	39.51		ng/Sample		104	60 - 140
8:2 FTS	38.3	43.98		ng/Sample		115	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.90		ng/Sample		130	60 - 140
HFPO-DA (GenX)	40.0	43.61		ng/Sample		109	60 - 140
F-53B Major	37.3	42.74		ng/Sample		115	60 - 140
F-53B Minor	37.7	35.43		ng/Sample		94	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*102*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*93*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*91*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*103*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
M2-6:2 FTS	*114*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
M2-4:2 FTS	*125*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.59		ng/Sample		101	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.57		ng/Sample		104	60 - 140

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.76		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	43.52		ng/Sample		109	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.23		ng/Sample		101	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.17		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.58		ng/Sample		99	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.85		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	42.04		ng/Sample		105	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.56		ng/Sample		96	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.00		ng/Sample		95	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	37.12		ng/Sample		105	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.15		ng/Sample		104	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.33		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.27		ng/Sample		114	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.41		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.23		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.44		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.23		ng/Sample		103	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.47		ng/Sample		104	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.85		ng/Sample		92	60 - 140
4:2 FTS	37.4	31.94		ng/Sample		85	60 - 140
6:2 FTS	37.9	31.58		ng/Sample		83	60 - 140
8:2 FTS	38.3	37.00		ng/Sample		97	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.10		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	47.25		ng/Sample		118	60 - 140
F-53B Major	37.3	44.52		ng/Sample		119	60 - 140
F-53B Minor	37.7	37.20		ng/Sample		99	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*99*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFTeDA	*94*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*94*		*25 - 150*
13C8 FOSA	*86*		*25 - 150*
d3-NMeFOSAA	*101*		*25 - 150*
d5-NEtFOSAA	*109*		*25 - 150*
M2-6:2 FTS	*133*		*25 - 150*
M2-8:2 FTS	*99*		*25 - 150*
M2-4:2 FTS	*147*		*25 - 150*
13C3 HFPO-DA	*93*		*25 - 150*

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.44		ng/Sample		101	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.97		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.26		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.07		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.61		ng/Sample		99	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.35		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.26		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.48		ng/Sample		96	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	42.11		ng/Sample		105	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.72		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	34.65		ng/Sample		87	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.87		ng/Sample		99	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.06		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.18		ng/Sample		94	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.11		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.86		ng/Sample		99	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.54		ng/Sample		106	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.00		ng/Sample		99	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	46.50		ng/Sample		116	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.63		ng/Sample		104	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.70		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.94		ng/Sample		112	60 - 140

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

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	38.87		ng/Sample		102	60 - 140
8:2 FTS	38.3	44.56		ng/Sample		116	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	52.68		ng/Sample		140	60 - 140
HFPO-DA (GenX)	40.0	40.33		ng/Sample		101	60 - 140
F-53B Major	37.3	44.17		ng/Sample		118	60 - 140
F-53B Minor	37.7	34.93		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*101*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*102*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*92*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*75*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
M2-6:2 FTS	*104*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*94*		*25 - 150*

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.56		ng/Sample		104	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.96		ng/Sample		102	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.20		ng/Sample		103	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.88		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.36		ng/Sample		96	60 - 140
Perfluorononanoic acid (PFNA)	40.0	45.59		ng/Sample		114	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.24		ng/Sample		101	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.08		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.52		ng/Sample		96	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.74		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	35.56		ng/Sample		89	60 - 140

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

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	36.61		ng/Sample		104	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.55		ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.77		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.79		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	37.52		ng/Sample		101	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	34.28		ng/Sample		89	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	36.19		ng/Sample		94	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	43.00		ng/Sample		108	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.02		ng/Sample		100	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.39		ng/Sample		93	60 - 140
4:2 FTS	37.4	31.90		ng/Sample		85	60 - 140
6:2 FTS	37.9	35.43		ng/Sample		93	60 - 140
8:2 FTS	38.3	35.82		ng/Sample		93	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.18		ng/Sample		125	60 - 140
HFPO-DA (GenX)	40.0	46.70		ng/Sample		117	60 - 140
F-53B Major	37.3	42.11		ng/Sample		113	60 - 140
F-53B Minor	37.7	34.93		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*85*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4 PFHpA	*87*		*25 - 150*
13C4 PFOA	*90*		*25 - 150*
13C5 PFNA	*86*		*25 - 150*
13C2 PFDA	*73*		*25 - 150*
13C2 PFUnA	*82*		*25 - 150*
13C2 PFDoA	*82*		*25 - 150*
13C2 PFTeDA	*83*		*25 - 150*
18O2 PFHxS	*77*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*73*		*25 - 150*
d3-NMeFOSAA	*83*		*25 - 150*
d5-NEtFOSAA	*91*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*79*		*25 - 150*
M2-4:2 FTS	*115*		*25 - 150*
13C3 HFPO-DA	*81*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.20		ng/Sample		103	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.01		ng/Sample		95	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.09		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.03		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.67		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.77		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	37.79		ng/Sample		94	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.35		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.33		ng/Sample		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	35.42		ng/Sample		100	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.86		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.61		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.56		ng/Sample		120	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.16		ng/Sample		97	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.96		ng/Sample		101	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.74		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	44.75		ng/Sample		112	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.84		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.82		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.65		ng/Sample		114	60 - 140
6:2 FTS	37.9	39.12		ng/Sample		103	60 - 140
8:2 FTS	38.3	40.04		ng/Sample		104	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.63		ng/Sample		126	60 - 140
HFPO-DA (GenX)	40.0	45.56		ng/Sample		114	60 - 140
F-53B Major	37.3	42.67		ng/Sample		114	60 - 140
F-53B Minor	37.7	36.73		ng/Sample		97	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*94*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
M2-6:2 FTS	*103*		*25 - 150*
M2-8:2 FTS	*106*		*25 - 150*
M2-4:2 FTS	*108*		*25 - 150*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.63		ng/Sample		102	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.69		ng/Sample		104	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	42.34		ng/Sample		106	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	39.79		ng/Sample		99	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.17		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	44.98		ng/Sample		112	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.29		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.34		ng/Sample		96	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.36		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.84		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	36.99		ng/Sample		105	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.74		ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.54		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.16		ng/Sample		113	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.26		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.01		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.44		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.83		ng/Sample		107	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.47		ng/Sample		99	60 - 140

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.36		ng/Sample		98	60 - 140
4:2 FTS	37.4	33.79		ng/Sample		90	60 - 140
6:2 FTS	37.9	31.65		ng/Sample		83	60 - 140
8:2 FTS	38.3	34.97		ng/Sample		91	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.09		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	44.66		ng/Sample		112	60 - 140
F-53B Major	37.3	39.10		ng/Sample		105	60 - 140
F-53B Minor	37.7	38.46		ng/Sample		102	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*86*		*25 - 150*
13C2 PFHxA	*89*		*25 - 150*
13C4 PFHpA	*93*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*77*		*25 - 150*
13C2 PFUnA	*84*		*25 - 150*
13C2 PFDoA	*89*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*83*		*25 - 150*
13C8 FOSA	*80*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*96*		*25 - 150*
M2-6:2 FTS	*115*		*25 - 150*
M2-8:2 FTS	*88*		*25 - 150*
M2-4:2 FTS	*126*		*25 - 150*
13C3 HFPO-DA	*90*		*25 - 150*

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanoic acid (PFOA)	1.299	I	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

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

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
6:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
8:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
HFPO-DA (GenX)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Major	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Minor	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C5 PFPeA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFHxA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFHpA	*105*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFOA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C5 PFNA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFDA	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFUnA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
18O2 PFHxS	*109*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFOS	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C8 FOSA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-6:2 FTS	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-8:2 FTS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-4:2 FTS	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C3 HFPO-DA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	47.47		ng/Sample		119	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.17		ng/Sample		103	60 - 140

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.57		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.60		ng/Sample		104	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	41.85		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.53		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.14		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.55		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.32		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.61		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.38		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	35.84		ng/Sample		96	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.73		ng/Sample		84	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.13		ng/Sample		108	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	40.15		ng/Sample		108	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.25		ng/Sample		105	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.58		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.01		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.65		ng/Sample		104	60 - 140
4:2 FTS	37.4	38.47		ng/Sample		103	60 - 140
6:2 FTS	37.9	40.44		ng/Sample		107	60 - 140
8:2 FTS	38.3	39.07		ng/Sample		102	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.26		ng/Sample		120	60 - 140
HFPO-DA (GenX)	40.0	49.23		ng/Sample		123	60 - 140
F-53B Major	37.3	41.87		ng/Sample		112	60 - 140
F-53B Minor	37.7	37.66		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*106*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFTeDA	102		25 - 150
18O2 PFHxS	112		25 - 150
13C4 PFOS	94		25 - 150
13C8 FOSA	93		25 - 150
d3-NMeFOSAA	92		25 - 150
d5-NEtFOSAA	102		25 - 150
M2-6:2 FTS	96		25 - 150
M2-8:2 FTS	90		25 - 150
M2-4:2 FTS	98		25 - 150
13C3 HFPO-DA	86		25 - 150

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.00		ng/Sample		115	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.98		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.87		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.82		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.67		ng/Sample		102	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.80		ng/Sample		110	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.94		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.11		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.91		ng/Sample		97	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	40.19		ng/Sample		100	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.19		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.75		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.50		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.60		ng/Sample		107	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	41.14		ng/Sample		111	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	41.02		ng/Sample		107	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.78		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.83		ng/Sample		107	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.01		ng/Sample		105	60 - 140
4:2 FTS	37.4	37.09		ng/Sample		99	60 - 140

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

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	43.24		ng/Sample		114	60 - 140
8:2 FTS	38.3	40.76		ng/Sample		106	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.97		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	44.57		ng/Sample		111	60 - 140
F-53B Major	37.3	43.37		ng/Sample		116	60 - 140
F-53B Minor	37.7	37.89		ng/Sample		101	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*96*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*104*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*92*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*99*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.48		ng/Sample		116	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.46		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.21		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.25		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	42.08		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.34		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.66		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.00		ng/Sample		100	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	41.39		ng/Sample		103	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.22		ng/Sample		96	60 - 140

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.97		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.49		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.15		ng/Sample		103	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	38.87		ng/Sample		105	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.54		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.18		ng/Sample		104	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	40.92		ng/Sample		102	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.09		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.00		ng/Sample		103	60 - 140
4:2 FTS	37.4	36.89		ng/Sample		99	60 - 140
6:2 FTS	37.9	41.61		ng/Sample		110	60 - 140
8:2 FTS	38.3	40.96		ng/Sample		107	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.08		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	49.79		ng/Sample		124	60 - 140
F-53B Major	37.3	41.22		ng/Sample		111	60 - 140
F-53B Minor	37.7	37.49		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*100*		*25 - 150*
18O2 PFHxS	*105*		*25 - 150*
13C4 PFOS	*96*		*25 - 150*
13C8 FOSA	*95*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*101*		*25 - 150*
M2-6:2 FTS	*89*		*25 - 150*
M2-8:2 FTS	*80*		*25 - 150*
M2-4:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

LCMS

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

Prep Batch: 336904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	None	
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-4 - RA	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	None	
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-14 - RA	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	None	
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-24 - RA	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
MB 320-336904/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 336962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	None	
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	None	
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	None	
MB 320-336962/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	None	

LCMS (Continued)

Prep Batch: 336962 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 337396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	Split	336962
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	Split	336962
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	Split	336962
MB 320-336962/1-C	Method Blank	Total/NA	Air	Split	336962
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Split	336962

Cleanup Batch: 338182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	Split	336904
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-4 - RA	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	Split	336904
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-14 - RA	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	Split	336904
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-24 - RA	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
MB 320-336904/1-C	Method Blank	Total/NA	Air	Split	336904
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Split	336904

Cleanup Batch: 338209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	Preparation	337396
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	Preparation	337396
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	Preparation	337396
MB 320-336962/1-C	Method Blank	Total/NA	Air	Preparation	337396
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Preparation	337396

Cleanup Batch: 338718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-4 - RA	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-14 - RA	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182

LCMS (Continued)

Cleanup Batch: 338718 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-24 - RA	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182
MB 320-336904/1-C	Method Blank	Total/NA	Air	Preparation	338182
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Preparation	338182
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Preparation	338182
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Preparation	338182

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	537 (modified)	338209
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	537 (modified)	338209
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	537 (modified)	338209
MB 320-336962/1-C	Method Blank	Total/NA	Air	537 (modified)	338209
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209

Analysis Batch: 343208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336904/1-C	Method Blank	Total/NA	Air	537 (modified)	338718
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718

Analysis Batch: 343817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718

Analysis Batch: 347688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718

LCMS (Continued)

Analysis Batch: 347688 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718
MB 320-336904/1-C	Method Blank	Total/NA	Air	537 (modified)	338718
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718

Analysis Batch: 349852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880

Analysis Batch: 352542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-4 - RA	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-14 - RA	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-24 - RA	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	53 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:11	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:27	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	350 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			350 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:23	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	350 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		350 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 14:58	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 08:43	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split	RA		12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation	RA		2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			352542	01/23/20 11:58	JRB	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:37	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:21	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	425 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			425 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:42	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	425 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		425 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:18	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 09:23	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split	RA		12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation	RA		2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			352542	01/23/20 12:08	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:30	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	415 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			415 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:02	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	415 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		415 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:38	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 10:13	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split	RA		12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation	RA		2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			352542	01/23/20 12:18	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank

Lab Sample ID: MB 320-336668/1-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336904/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:44	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 19:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336962/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:32	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/2-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:54	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 19:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/3-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:04	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/4-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:14	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/4-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/2-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:42	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/3-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:51	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/4-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:01	S1M	TAL SAC
	Instrument ID: A12									

Laboratory References:

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-1
Project/Site: M0010 Field Samples (MeOH)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-1
Project/Site: M0010 Field Samples (MeOH)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17067-1	E-1305,1306 R1 M0010 FH	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-2	E-1307,1308 R1 M0010 BH	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-11	E-1319,1320 R3 M0010 FH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-12	E-1321,1322 R3 M0010 BH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-21	A-6612,6613 R5 M0010 FH	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-22	A-6614,6615 R5 M0010 BH	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/16/19 00:00	10/19/19 09:30	

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Stack Testing for PFAS

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	

140-17067 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1305 R1 M0010 Filter (Combine with *E-1306*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1306 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-1305*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1307 R1 M0010 XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1308 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1307*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1309 R1 M0010 Impingers 1,2 & 3 Condensate	1	10/13/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1310 R1 M0010 Impinger Glassware MeOH Rinse	1	10/13/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1311 R1 M0010 Breakthrough XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1312 R2 M0010 Filter (Combine with *E-1313*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1313 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1312*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1314 R2 M0010 XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1315 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1314*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1316 R2 M0010 Impingers 1,2 & 3 Condensate	2	10/14/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1317 R2 M0010 Impinger Glassware MeOH Rinse	2	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1318 R2 M0010 Breakthrough XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1319 R3 M0010 Filter (Combine with *E-1320*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

x3

x2

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1320 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1319*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1321 R3 M0010 XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1322 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1321*	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1323 R3 M0010 Impingers 1,2 & 3 Condensate	3	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1324 R3 M0010 Impinger Glassware MeOH Rinse	3	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1325 R3 M0010 Breakthrough XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1326 R4 M0010 ~~Ambient Air~~ Filter (Combine with *E-1327*) Regular RUN Condition NOT Ambient Air	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1327 R4 M0010 ~~Ambient Air~~ Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1326*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1328 R4 M0010 ~~Ambient Air~~ XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1329 R4 M0010 ~~Ambient Air~~ BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1328*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1330 R4 M0010 ~~Ambient Air~~ Impingers 1,2 & 3 Condensate	4	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1331 R4 M0010 ~~Ambient Air~~ Impinger Glassware MeOH Rinse	4	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1332 R4 M0010 ~~Ambient Air~~ Breakthrough XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2 / CT 5.5, 5.3, 5.2, 4.2 °C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO (VISTONY STAINS, 5 COOLERS FED EX # 776259922962 m FAS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Gehl	ETA	10/17/19 11:32
Accepted By:	W.M.	AST	10/17/19 11:32
Relinquished By:	W.M.	AST	10/18/19 11:35
Accepted By:	Bruce Damon	ESA-KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Scrubber By-Pass Testing for PFAS – Task .50

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

NOT SCRUBBER By pass - Regular Condition

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6605 R1 M0010 Filter (Combine with *A-6606*)	~~1~~	VOID Set-up as #5 RUN NOT completed		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6606 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *A-6605*)	1			125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6607 R1 M0010 XAD-2 Resin Tube	1			XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6608 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6607*)	1	Void		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6609 R1 M0010 Impingers 1,2 & 3 Condensate	1			1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6610 R1 M0010 Impinger Glassware MeOH Rinse	1			250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6611 R1 M0010 Breakthrough XAD-2 Resin Tube	1			XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 R2 M0010 Filter (Combine with *A-6613*)	2	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6613 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6612*)	2	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 R2 M0010 XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6614*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 R2 M0010 Impingers 1,2 & 3 Condensate X3	2 5 6 5	10/16/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6617 R2 M0010 Impinger Glassware MeOH Rinse	2 5 6 5	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6618 R2 M0010 Breakthrough XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6619 R3 M0010 Filter (Combine with *A-6620*)	5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6620 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6619*)	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6621 R3 M0010 XAD-2 Resin Tube	8 5 6	10/17/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6622 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6621*	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6623 R3 M0010 Impingers 1,2 & 3 Condensate	8 5 6	10/17/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6624 R3 M0010 Impinger Glassware MeOH Rinse	8 5 6	10/17/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

X2

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6625 R3 M0010 Breakthrough XAD-2 Resin Tube	~~5~~ 6	10/17/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2 / CT 5.5, 5.3, 5.2, 4.2 °C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX# 773759422982 FOR

Custody Transfer:

		Name	Company	Date/Time
Relinquished By:	Doug Colvill		ETA	10/17/19 11:40
Accepted By:			AST	10/17/19 1:16
Relinquished By:			AST	10/18/ 11:3
Accepted By:			STAVX	10-19-19 09:30
Relinquished By:				
Accepted By:				
Relinquished By:				
Accepted By:				

Loc: 140
17067

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SI68 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 10-2419

QA026R32.doc, 062719

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-17067-1

Login Number: 17067
List Number: 3
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1046130/1046139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17067-3
Client Project/Site: M0010 Field Samples (MeOH Re-Extraction)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 2:03:24 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time
I	Value is EMPC (estimated maximum possible concentration).
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17067-3

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17067-3

Sample Receipt

The samples were received on October 19, 2020 at 9:30 AM in good condition andproperly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C and 5.5º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

GC/MS Semi VOA

Method 537 (modified): Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) was detected above the reporting limit (RL) in the method blank associated with preparation batch 320-332801, 320-333704 and 320-341442 and analytical batch 320-342900 as well as in the following samples: E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8), E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18), A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28) and (MB 320-332801/1-C). There was insufficient sample to perform a re-extraction again; therefore, the data have been reported.

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

LCMS

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recovery associated with the following samples are below the method recommended limit: E-1312,1313 R2 M0010 FH (140-17067-6). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s). Associated samples were not re-extracted and/or re-analyzed due to limited sample volume.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332969, 320-333724 and 320-337476 and analytical batch 320-339124 recovered outside control limits for the several analytes.

Method 537 (modified): The method blank for preparation batch 320-333081, 320-337395 and 320-338212 and analytical batch 320-340430 contained several analytes above the reporting limit (RL). Associated samples were not re-extracted due to limited sample volume.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333081, 320-337395 and 320-338212 and analytical batch 320-340430 recovered outside control limits for the following analytes: HFPO-DA (GenX). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. Associated samples were not re-extracted due to limited sample volume.

Method 537 (modified): Several Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10), E-1328,1329 R4 M0010 BH (140-17067-17) and E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. The samples were not re-extracted due to limited sample volume.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332801, 320-333704 and 320-341442 and

Job ID: 140-17067-3 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

analytical batch 320-342900 recovered outside control limits for several analytes. Sample re-extraction and reanalysis was not possible due to insufficient sample; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.
E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18)

Method 537 (modified): Due to exceedingly low concentrations of Isotope Dilution Analytes (IDAs) in the original extract, the following samples required isotope dilution analyte solutions to be refortified into the extract at a 1X dilution so quantitation could be performed. E-1312,1313 R2 M0010 FH (140-17067-6), E-1326,1327 R4 M0010 FH (140-17067-16), A-6619,6620 R6 M0010 FH (140-17067-26), (LCS 320-333418/2-D), (LCS 320-333418/3-D), (LCS 320-333418/4-D) and (MB 320-333418/1-D). The client was contacted and gave permission to report data with possible low bias.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 and analytical batch 320-342895 recovered outside control limits for all the analytes. The LCS was reanalyzed with concurring results. The data have been reported with low bias results.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Due to insufficient sample re-extraction and/or re-analysis of samples were not performed. The method blank was re-analyzed with concurring results; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained HFPO-DA (GenX) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): Due to exceedingly low concentrations of isotope dilution analytes in the original extract, the following sample required isotope dilution analyte solutions to be refortified into the extract after dilution so quantitation could be performed. Sample re-extraction and reanalysis was not possible due to insufficient sample. Client was contacted and gave permission to report with narration and possible low bias results.

E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10), E-1328,1329 R4 M0010 BH (140-17067-17), E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20), A-6621,6622 R6 M0010 BH (140-17067-27), A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30), (LCS 320-332701/2-D), (LCS 320-332701/3-D), (LCS 320-332701/4-D) and (MB 320-332701/1-D)

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA), HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 and analytical batch 320-342657 recovered outside control limits for several analytes. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported with possible low bias.

Job ID: 140-17067-3 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10) and E-1328,1329 R4 M0010 BH (140-17067-17)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-6:2 FTS is above the method recommended limit for the following sample: A-6621,6622 R6 M0010 BH (140-17067-27). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The method blank for preparation batch 320-336904, 320-338182 and 320-338718 and analytical batch 320-343208 contained Perfluorobutanoic acid (PFBA) above the method reporting limit (RL). Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample volume.

Method 537 (modified): Due to exceedingly low concentrations of isotope dilution analytes in the original extract, the following samples required isotope dilution analyte solutions to be refortified into the extract after dilution so quantitation could be performed. Sample re-extraction and reanalysis was not possible due to insufficient sample. Client was contacted and gave permission to report with narration and possible low bias results.

E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8), E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18), A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28), (LCS 320-332801/2-C), (LCS 320-332801/3-C), (LCS 320-332801/4-C) and (MB 320-332801/1-C)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following samples for M2-6:2 FTS: E-1314,1315 R2 M0010 BH (140-17067-7), E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20), A-6621,6622 R6 M0010 BH (140-17067-27) and A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The following samples required a complex dilution due to the nature of the sample matrix: E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10), E-1328,1329 R4 M0010 BH (140-17067-17), E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20), A-6621,6622 R6 M0010 BH (140-17067-27) and A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 537 (modified): The following samples required a dilution due to the nature of the sample matrix: E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18) and A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28). Because of this dilution, the surrogate spike concentration of 13C8 PFOA and 13C8 PFOS in the samples were reduced to a level where the recovery calculation does not provide useful information.

Method 537 (modified): Surrogate recovery for 13C8 PFOA in the following continuing calibration verification was outside control limits: (CCV 320-349852/15). The surrogate recovery was biased high and all the associated samples were ND for this surrogate due to the possibility of not being spiked into the samples.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: E-1314,1315 R2 M0010 BH (140-17067-7), E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10), E-1328,1329 R4 M0010 BH (140-17067-17), E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18), E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20), A-6621,6622 R6 M0010 BH (140-17067-27), A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28) and A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30).

Method 537 (modified): The method blank (MB) for preparation batch 320-333418, 320-337394 and 320-338203 and analytical batch 320-339368 contained several analytes above the reporting limit (RL). The MB was re-analyzed with concurring results. Associated sample was not re-extracted due to limited sample volume. (MB 320-333418/1-C)

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Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): The laboratory control samples (LCS) for preparation batch 320-333418, 320-337394 and 320-338203 and analytical batch 320-339368 recovered outside control limits for many of the analytes. The LCSs were re-analyzed with concurring results. Associated samples were not re-extracted due to limited sample volume. (LCS 320-333418/2-C), (LCS 320-333418/3-C) and (LCS 320-333418/4-C)

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for several IDA: E-1312,1313 R2 M0010 FH (140-17067-6), E-1326,1327 R4 M0010 FH (140-17067-16), A-6619,6620 R6 M0010 FH (140-17067-26), (LCS 320-333418/2-C), (LCS 320-333418/3-C), (LCS 320-333418/4-C) and (MB 320-333418/1-C). The samples were re-analyzed with concurring results. The samples were not re-extracted due to limits sample volume. The samples were also re-fortified with IDA and re-analyzed. Both sets of data are reported.

Method 537 (modified): The concentration of HFPO-DA (GenX) associated with the following sample exceeded the instrument calibration range: E-1312,1313 R2 M0010 FH (140-17067-6). This analyte has been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte. (LCS 320-333418/2-C), (LCS 320-333418/3-C) and (LCS 320-333418/4-C)

Method 537 (modified): Internal standard (ISTD) response for 13C2 PFOA for the following samples was outside acceptance criteria: A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30). The associated surrogate recoveries were within control limits; therefore, the data have been reported.

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

Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client Sample ID: E-1312,1313 R2 M0010 FH

Lab Sample ID: 140-17067-6

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
Perfluorooctanesulfonamide (FOSA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
HFPO-DA (GenX)	**7.70**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1
F-53B Minor	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*62*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C5 PFPeA	*63*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C2 PFHxA	*63*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C4 PFHpA	*63*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C4 PFOA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C5 PFNA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C2 PFDA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C2 PFUnA	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C2 PFDoA	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C2 PFTeDA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
18O2 PFHxS	*68*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C4 PFOS	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C8 FOSA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
d3-NMeFOSAA	*51*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
d5-NEtFOSAA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*

Client Sample ID: E-1312,1313 R2 M0010 FH

Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17067-6

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	*79*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
M2-8:2 FTS	*62*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
M2-4:2 FTS	*54*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*
13C3 HFPO-DA	*62*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:47*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**130**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
Perfluorooctanesulfonamide (FOSA)	**43.5**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
8:2 FTS	**32.6**	****	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	**38.6**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
HFPO-DA (GenX)	**2050**	**E B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1
F-53B Minor	**67.8**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*0.3*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C5 PFPeA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C2 PFHxA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C4 PFHpA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C4 PFOA	*0.4*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C5 PFNA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C2 PFDA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*
13C2 PFUnA	*0.2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:45*	*1*

Client Sample ID: E-1312,1313 R2 M0010 FH

Lab Sample ID: 140-17067-6
Matrix: Air
Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	0.2	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
13C2 PFTeDA	0.2	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
18O2 PFHxS	0.2	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
13C4 PFOS	0.1	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
13C8 FOSA	0.2	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
d3-NMeFOSAA	0.2	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
d5-NEtFOSAA	0.1	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
M2-6:2 FTS	0	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
M2-8:2 FTS	0.4	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
M2-4:2 FTS	0.3	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1
13C3 HFPO-DA	0.09	*	25 - 150	10/24/19 15:00	11/17/19 15:45	1

Client Sample ID: E-1314,1315 R2 M0010 BH

Lab Sample ID: 140-17067-7
Matrix: Air
Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.24**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorohexanoic acid (PFHxA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorooctanoic acid (PFOA)	**2.39**	**H I B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorodecanoic acid (PFDA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorobutanesulfonic acid (PFBS)	ND	H I *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
HFPO-DA (GenX)	**21.9**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1

Client Sample ID: E-1314,1315 R2 M0010 BH

Lab Sample ID: 140-17067-7

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C5 PFPeA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C2 PFHxA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C4 PFHpA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C4 PFOA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C5 PFNA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C2 PFDA	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C2 PFUnA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C2 PFDoA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C2 PFTeDA	*58*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
18O2 PFHxS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C4 PFOS	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C8 FOSA	*91*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
d3-NMeFOSAA	*81*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
M2-6:2 FTS	*151*	*	*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
M2-8:2 FTS	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
M2-4:2 FTS	*63*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*
13C3 HFPO-DA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:57*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11.6**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluoropentanoic acid (PFPeA)	**1.88**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorohexanoic acid (PFHxA)	**49.8**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluoroheptanoic acid (PFHpA)	**70.5**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorooctanoic acid (PFOA)	**28.5**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorononanoic acid (PFNA)	**1.96**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorodecanoic acid (PFDA)	**26.3**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorobutanesulfonic acid (PFBS)	**5.02**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorohexanesulfonic acid (PFHxS)	**1.04**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorooctanesulfonic acid (PFOS)	**2.06**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
Perfluorooctanesulfonamide (FOSA)	**27.1**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1

Client Sample ID: E-1314,1315 R2 M0010 BH

Lab Sample ID: 140-17067-7
Matrix: Air
Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**1.79**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**2.84**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
6:2 FTS	**1.75**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
HFPO-DA (GenX)	**311**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*54*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C5 PFPeA	*71*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C2 PFHxA	*83*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C4 PFHpA	*85*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C4 PFOA	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C5 PFNA	*87*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C2 PFDA	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C2 PFUnA	*100*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C2 PFDoA	*107*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C2 PFTeDA	*100*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
18O2 PFHxS	*94*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C4 PFOS	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C8 FOSA	*0.5*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
d3-NMeFOSAA	*18*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
d5-NEtFOSAA	*13*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
M2-6:2 FTS	*122*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
M2-8:2 FTS	*120*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
M2-4:2 FTS	*127*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*
13C3 HFPO-DA	*65*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:34*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*101*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:17*	*1*
13C8 PFOS	*85*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:17*	*1*

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-8
Matrix: Air
Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorobutanoic acid (PFBA)	**5.77**	**H B ***	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluoropentanoic acid (PFPeA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluoropentanoic acid (PFPeA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-8

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorohexanoic acid (PFHxA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluoroheptanoic acid (PFHpA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorooctanoic acid (PFOA)	**2.37**		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorooctanoic acid (PFOA)	**4.27**	**H I B**	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorononanoic acid (PFNA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorononanoic acid (PFNA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorodecanoic acid (PFDA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorodecanoic acid (PFDA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluoroundecanoic acid (PFUnA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorododecanoic acid (PFDoA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorotridecanoic acid (PFTriA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorotridecanoic acid (PFTriA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorononanesulfonic acid (PFNS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorononanesulfonic acid (PFNS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
Perfluorooctanesulfonamide (FOSA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
Perfluorooctanesulfonamide (FOSA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
4:2 FTS	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
4:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
6:2 FTS	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
6:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-8

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 FTS	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
8:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
HFPO-DA (GenX)	**5.85**		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
HFPO-DA (GenX)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
F-53B Major	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
F-53B Major	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1
F-53B Minor	ND		1.99	1.95	ng/Sample		11/07/19 13:00	11/17/19 00:33	1
F-53B Minor	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C4 PFBA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C5 PFPeA	*99*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C5 PFPeA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C2 PFHxA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C4 PFHpA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C4 PFHpA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C4 PFOA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C4 PFOA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C5 PFNA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C5 PFNA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C2 PFDA	*115*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C2 PFDA	*40*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C2 PFUnA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C2 PFDoA	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C2 PFDoA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C2 PFTeDA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
18O2 PFHxS	*118*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
18O2 PFHxS	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C4 PFOS	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C4 PFOS	*79*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
13C8 FOSA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
13C8 FOSA	*81*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
M2-6:2 FTS	*125*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
M2-6:2 FTS	*107*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
M2-8:2 FTS	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*
M2-4:2 FTS	*104*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:33*	*1*
M2-4:2 FTS	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:27*	*1*

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-8

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		25 - 150	11/07/19 13:00	11/17/19 00:33	1
13C3 HFPO-DA	54		25 - 150	10/22/19 17:20	12/20/19 22:27	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.05	X	50 - 150	11/07/19 13:00	01/09/20 15:08	1
13C8 PFOS	0.008	X	50 - 150	11/07/19 13:00	01/09/20 15:08	1

Client Sample ID: E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE
Lab Sample ID: 140-17067-9

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.24**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluoroheptanoic acid (PFHpA)	ND	H I	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:03	1

Client Sample ID: E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-9

Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	91		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C5 PFPeA	90		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C2 PFHxA	89		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C4 PFHpA	93		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C4 PFOA	94		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C5 PFNA	90		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C2 PFDA	95		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C2 PFUnA	91		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C2 PFDoA	101		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C2 PFTeDA	102		25 - 150	11/08/19 14:30	12/06/19 09:03	1
18O2 PFHxS	90		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C4 PFOS	87		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C8 FOSA	94		25 - 150	11/08/19 14:30	12/06/19 09:03	1
d3-NMeFOSAA	104		25 - 150	11/08/19 14:30	12/06/19 09:03	1
d5-NEtFOSAA	118		25 - 150	11/08/19 14:30	12/06/19 09:03	1
M2-6:2 FTS	98		25 - 150	11/08/19 14:30	12/06/19 09:03	1
M2-8:2 FTS	95		25 - 150	11/08/19 14:30	12/06/19 09:03	1
M2-4:2 FTS	96		25 - 150	11/08/19 14:30	12/06/19 09:03	1
13C3 HFPO-DA	85		25 - 150	11/08/19 14:30	12/06/19 09:03	1

Client Sample ID: E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-10

Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.69**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorohexanoic acid (PFHxA)	**3.80**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluoroheptanoic acid (PFHpA)	**6.16**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorooctanoic acid (PFOA)	**5.67**	**H I B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorodecanoic acid (PFDA)	**3.10**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1

Client Sample ID: E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-17067-10
Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
HFPO-DA (GenX)	**39.3**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C5 PFPeA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C2 PFHxA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C4 PFHpA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C4 PFOA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C5 PFNA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C2 PFDA	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C2 PFUnA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C2 PFDoA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C2 PFTeDA	*65*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
18O2 PFHxS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C4 PFOS	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C8 FOSA	*87*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
M2-6:2 FTS	*165*	*	*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
M2-8:2 FTS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
M2-4:2 FTS	*62*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*
13C3 HFPO-DA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:07*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.37**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluoropentanoic acid (PFPeA)	**1.75**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorohexanoic acid (PFHxA)	**51.6**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluoroheptanoic acid (PFHpA)	**78.9**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorooctanoic acid (PFOA)	**25.4**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorodecanoic acid (PFDA)	**25.7**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorobutanesulfonic acid (PFBS)	**5.58**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-10

Date Collected: 10/14/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorohexanesulfonic acid (PFHxS)	**1.01**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorooctanesulfonic acid (PFOS)	**2.10**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
Perfluorooctanesulfonamide (FOSA)	**4.44**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**1.40**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
6:2 FTS	**1.52**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
HFPO-DA (GenX)	**179**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*55*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C5 PFPeA	*75*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C2 PFHxA	*88*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C4 PFHpA	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C4 PFOA	*101*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C5 PFNA	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C2 PFDA	*104*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C2 PFUnA	*111*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C2 PFDoA	*119*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C2 PFTeDA	*113*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
18O2 PFHxS	*97*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C4 PFOS	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C8 FOSA	*0.7*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
d3-NMeFOSAA	*11*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
d5-NEtFOSAA	*7*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
M2-6:2 FTS	*125*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
M2-8:2 FTS	*133*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
M2-4:2 FTS	*139*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*
13C3 HFPO-DA	*72*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:44*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*113*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:28*	*1*
13C8 PFOS	*96*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:28*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1326,1327 R4 M0010 FH
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17067-16
Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.50**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
Perfluorooctanesulfonamide (FOSA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
HFPO-DA (GenX)	**3.02**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1
F-53B Minor	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C5 PFPeA	*61*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C2 PFHxA	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C4 PFHpA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C4 PFOA	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C5 PFNA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C2 PFDA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C2 PFUnA	*51*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C2 PFDoA	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
18O2 PFHxS	*64*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C4 PFOS	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
13C8 FOSA	*51*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
d3-NMeFOSAA	*45*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*
d5-NEtFOSAA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:57*	*1*

Client Sample ID: E-1326,1327 R4 M0010 FH

Lab Sample ID: 140-17067-16

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	76		25 - 150	10/24/19 15:00	12/03/19 18:57	1
M2-8:2 FTS	64		25 - 150	10/24/19 15:00	12/03/19 18:57	1
M2-4:2 FTS	49		25 - 150	10/24/19 15:00	12/03/19 18:57	1
13C3 HFPO-DA	58		25 - 150	10/24/19 15:00	12/03/19 18:57	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**15.5**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
Perfluorooctanesulfonamide (FOSA)	**63.2**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
6:2 FTS	**12.5**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
8:2 FTS	**7.06**	*****	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
HFPO-DA (GenX)	**292**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
F-53B Major	**16.9**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1
F-53B Minor	**10.8**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:55	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	2	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C5 PFPeA	1	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C2 PFHxA	1	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C4 PFHpA	1	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C4 PFOA	1	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C5 PFNA	0.8	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C2 PFDA	0.8	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C2 PFUnA	0.8	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1

Client Sample ID: E-1326,1327 R4 M0010 FH
Lab Sample ID: 140-17067-16

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	0.6	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C2 PFTeDA	0.7	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
18O2 PFHxS	0.3	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C4 PFOS	0.4	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C8 FOSA	0.1	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
d3-NMeFOSAA	0.4	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
d5-NEtFOSAA	0.3	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
M2-6:2 FTS	2	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
M2-8:2 FTS	2	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
M2-4:2 FTS	3	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1
13C3 HFPO-DA	0.4	*	25 - 150	10/24/19 15:00	11/17/19 15:55	1

Client Sample ID: E-1328,1329 R4 M0010 BH
Lab Sample ID: 140-17067-17

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.77**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorohexanoic acid (PFHxA)	ND	H I *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluoroheptanoic acid (PFHpA)	**1.23**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorooctanoic acid (PFOA)	**3.46**	**H I B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorononanoic acid (PFNA)	ND	H I *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorodecanoic acid (PFDA)	**1.11**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorobutanesulfonic acid (PFBS)	ND	H I *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
HFPO-DA (GenX)	**18.8**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1

Client Sample ID: E-1328,1329 R4 M0010 BH

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17067-17

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C5 PFPeA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C2 PFHxA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C4 PFHpA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C4 PFOA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C5 PFNA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C2 PFDA	*40*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C2 PFDoA	*41*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C2 PFTeDA	*60*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
18O2 PFHxS	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C4 PFOS	*40*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C8 FOSA	*83*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
M2-6:2 FTS	*140*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
M2-8:2 FTS	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
M2-4:2 FTS	*57*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*
13C3 HFPO-DA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:18*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.93**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluoropentanoic acid (PFPeA)	**1.68**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorohexanoic acid (PFHxA)	**56.8**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluoroheptanoic acid (PFHpA)	**84.8**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorooctanoic acid (PFOA)	**28.1**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorodecanoic acid (PFDA)	**29.4**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorobutanesulfonic acid (PFBS)	**5.75**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorooctanesulfonic acid (PFOS)	**2.40**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
Perfluorooctanesulfonamide (FOSA)	**12.0**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1

Client Sample ID: E-1328,1329 R4 M0010 BH
Lab Sample ID: 140-17067-17

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
6:2 FTS	**1.64**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
HFPO-DA (GenX)	**184**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 17:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C5 PFPeA	*67*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C2 PFHxA	*78*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C4 PFHpA	*81*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C4 PFOA	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C5 PFNA	*87*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C2 PFDA	*93*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C2 PFUnA	*98*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C2 PFDoA	*107*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C2 PFTeDA	*103*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
18O2 PFHxS	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C8 FOSA	*0.1*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
d3-NMeFOSAA	*8*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
d5-NEtFOSAA	*4*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
M2-6:2 FTS	*122*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
M2-8:2 FTS	*113*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*
13C3 HFPO-DA	*68*		*25 - 150*	*10/23/19 16:00*	*11/21/19 17:53*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*100*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:38*	*1*
13C8 PFOS	*90*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:38*	*1*

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-18

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorobutanoic acid (PFBA)	**5.75**	**H B ***	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluoropentanoic acid (PFPeA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluoropentanoic acid (PFPeA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-18

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorohexanoic acid (PFHxA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluoroheptanoic acid (PFHpA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluoroheptanoic acid (PFHpA)	ND	H I *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorooctanoic acid (PFOA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorooctanoic acid (PFOA)	**4.38**	**H I B**	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorononanoic acid (PFNA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorononanoic acid (PFNA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorodecanoic acid (PFDA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorodecanoic acid (PFDA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluoroundecanoic acid (PFUnA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorododecanoic acid (PFDoA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorotridecanoic acid (PFTriA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorotridecanoic acid (PFTriA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorobutanesulfonic acid (PFBS)	ND	H I *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorononanesulfonic acid (PFNS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
Perfluorooctanesulfonamide (FOSA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
4:2 FTS	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
4:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
6:2 FTS	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
6:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-18

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 FTS	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
8:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
HFPO-DA (GenX)	**5.78**		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
HFPO-DA (GenX)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
F-53B Major	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
F-53B Major	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1
F-53B Minor	ND		2.00	1.96	ng/Sample		11/07/19 13:00	11/17/19 00:52	1
F-53B Minor	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 22:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*102*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C4 PFBA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C5 PFPeA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C2 PFHxA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C2 PFHxA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C4 PFHpA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C4 PFHpA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C4 PFOA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C4 PFOA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C5 PFNA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C5 PFNA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C2 PFDA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C2 PFDA	*41*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C2 PFUnA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C2 PFDoA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C2 PFDoA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C2 PFTeDA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C2 PFTeDA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
18O2 PFHxS	*119*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
18O2 PFHxS	*64*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C4 PFOS	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C4 PFOS	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
13C8 FOSA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
13C8 FOSA	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
d3-NMeFOSAA	*78*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
M2-6:2 FTS	*115*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
M2-8:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
M2-8:2 FTS	*61*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*
M2-4:2 FTS	*93*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:52*	*1*
M2-4:2 FTS	*61*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:37*	*1*

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-18

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	106		25 - 150	11/07/19 13:00	11/17/19 00:52	1
13C3 HFPO-DA	41		25 - 150	10/22/19 17:20	12/20/19 22:37	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.06	X	50 - 150	11/07/19 13:00	01/09/20 15:28	1
13C8 PFOS	0	X	50 - 150	11/07/19 13:00	01/09/20 15:28	1

Client Sample ID: E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE
Lab Sample ID: 140-17067-19

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.43**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:43	1

Client Sample ID: E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-19

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	91		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C5 PFPeA	87		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C2 PFHxA	95		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C4 PFHpA	91		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C4 PFOA	95		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C5 PFNA	90		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C2 PFDA	90		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C2 PFUnA	89		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C2 PFDoA	98		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C2 PFTeDA	93		25 - 150	11/08/19 14:30	12/06/19 09:43	1
18O2 PFHxS	90		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C4 PFOS	86		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C8 FOSA	92		25 - 150	11/08/19 14:30	12/06/19 09:43	1
d3-NMeFOSAA	101		25 - 150	11/08/19 14:30	12/06/19 09:43	1
d5-NEtFOSAA	112		25 - 150	11/08/19 14:30	12/06/19 09:43	1
M2-6:2 FTS	88		25 - 150	11/08/19 14:30	12/06/19 09:43	1
M2-8:2 FTS	86		25 - 150	11/08/19 14:30	12/06/19 09:43	1
M2-4:2 FTS	92		25 - 150	11/08/19 14:30	12/06/19 09:43	1
13C3 HFPO-DA	91		25 - 150	11/08/19 14:30	12/06/19 09:43	1

Client Sample ID: E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-20

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.22**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorohexanoic acid (PFHxA)	**6.47**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluoroheptanoic acid (PFHpA)	**9.49**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorooctanoic acid (PFOA)	**6.02**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorodecanoic acid (PFDA)	**4.55**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1

Client Sample ID: E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-20

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
HFPO-DA (GenX)	**95.8**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C5 PFPeA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C2 PFHxA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C4 PFHpA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C4 PFOA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C5 PFNA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C2 PFDA	*43*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C2 PFUnA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C2 PFDoA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C2 PFTeDA	*65*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
18O2 PFHxS	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C4 PFOS	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C8 FOSA	*87*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
M2-6:2 FTS	*152*	*	*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
M2-8:2 FTS	*57*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
M2-4:2 FTS	*61*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*
13C3 HFPO-DA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:28*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.16**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluoropentanoic acid (PFPeA)	**1.42**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorohexanoic acid (PFHxA)	**47.9**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluoroheptanoic acid (PFHpA)	**68.3**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorooctanoic acid (PFOA)	**23.0**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorodecanoic acid (PFDA)	**24.2**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorobutanesulfonic acid (PFBS)	**5.19**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1

Client Sample ID: E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-17067-20
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorooctanesulfonic acid (PFOS)	**2.13**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
Perfluorooctanesulfonamide (FOSA)	**12.3**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
6:2 FTS	**1.57**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
HFPO-DA (GenX)	**57.6**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C5 PFPeA	*73*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C2 PFHxA	*83*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C4 PFHpA	*87*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C4 PFOA	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C5 PFNA	*90*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C2 PFDA	*96*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C2 PFUnA	*99*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C2 PFDoA	*107*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
18O2 PFHxS	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C8 FOSA	*0.6*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
d3-NMeFOSAA	*6*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
d5-NEtFOSAA	*5*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
M2-6:2 FTS	*116*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
M2-8:2 FTS	*119*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
M2-4:2 FTS	*124*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*
13C3 HFPO-DA	*69*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:03*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*108*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:48*	*1*
13C8 PFOS	*86*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:48*	*1*

Client Sample ID: A-6619,6620 R6 M0010 FH
Lab Sample ID: 140-17067-26
Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.56**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
Perfluorooctanesulfonamide (FOSA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
HFPO-DA (GenX)	**3.56**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1
F-53B Minor	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C5 PFPeA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C2 PFHxA	*57*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C4 PFHpA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C4 PFOA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C5 PFNA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C2 PFDA	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C2 PFUnA	*48*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C2 PFDoA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
18O2 PFHxS	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C4 PFOS	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
13C8 FOSA	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
d3-NMeFOSAA	*48*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*
d5-NEtFOSAA	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:07*	*1*

Client Sample ID: A-6619,6620 R6 M0010 FH
Lab Sample ID: 140-17067-26
Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	68		25 - 150	10/24/19 15:00	12/03/19 19:07	1
M2-8:2 FTS	53		25 - 150	10/24/19 15:00	12/03/19 19:07	1
M2-4:2 FTS	48		25 - 150	10/24/19 15:00	12/03/19 19:07	1
13C3 HFPO-DA	59		25 - 150	10/24/19 15:00	12/03/19 19:07	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**49.7**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorononanoic acid (PFNA)	**13.4**	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
Perfluorooctanesulfonamide (FOSA)	**53.9**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
6:2 FTS	**16.0**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
HFPO-DA (GenX)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1
F-53B Minor	**33.0**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	1	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C5 PFPeA	1	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C2 PFHxA	1	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C4 PFHpA	0.8	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C4 PFOA	0.9	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C5 PFNA	0.7	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C2 PFDA	0.7	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C2 PFUnA	0.5	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1

Client Sample ID: A-6619,6620 R6 M0010 FH

Lab Sample ID: 140-17067-26

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	0.7	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C2 PFTeDA	0.5	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
18O2 PFHxS	0.07	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C4 PFOS	0.06	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C8 FOSA	0.07	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
d3-NMeFOSAA	8	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
d5-NEtFOSAA	5	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
M2-6:2 FTS	0.7	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
M2-8:2 FTS	0.9	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
M2-4:2 FTS	1	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1
13C3 HFPO-DA	0.2	*	25 - 150	10/24/19 15:00	11/17/19 16:05	1

Client Sample ID: A-6621,6622 R6 M0010 BH

Lab Sample ID: 140-17067-27

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.30**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorohexanoic acid (PFHxA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorooctanoic acid (PFOA)	**1.44**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorodecanoic acid (PFDA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
HFPO-DA (GenX)	**12.2**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1

Client Sample ID: A-6621,6622 R6 M0010 BH

Lab Sample ID: 140-17067-27

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C5 PFPeA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C2 PFHxA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C4 PFHpA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C4 PFOA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C5 PFNA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C2 PFDA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C2 PFUnA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C2 PFDoA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C2 PFTeDA	*60*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
18O2 PFHxS	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C4 PFOS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C8 FOSA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
d3-NMeFOSAA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
d5-NEtFOSAA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
M2-6:2 FTS	*154*	*	*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
M2-8:2 FTS	*60*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
M2-4:2 FTS	*67*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*
13C3 HFPO-DA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:38*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.06**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorohexanoic acid (PFHxA)	**1.87**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluoroheptanoic acid (PFHpA)	**1.43**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorooctanoic acid (PFOA)	**1.42**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1

Client Sample ID: A-6621,6622 R6 M0010 BH

Lab Sample ID: 140-17067-27

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
HFPO-DA (GenX)	**94.3**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C5 PFPeA	*74*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C2 PFHxA	*87*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C4 PFHpA	*84*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C4 PFOA	*90*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C5 PFNA	*88*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C2 PFDA	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C2 PFUnA	*97*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C2 PFDoA	*101*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C2 PFTeDA	*100*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
18O2 PFHxS	*87*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C4 PFOS	*82*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C8 FOSA	*66*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
M2-6:2 FTS	*104*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
M2-4:2 FTS	*117*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*
13C3 HFPO-DA	*70*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:12*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*104*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:58*	*1*
13C8 PFOS	*77*		*50 - 150*	*10/23/19 16:00*	*01/09/20 11:58*	*1*

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-28

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.29**		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorobutanoic acid (PFBA)	**4.93**	**H B ***	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluoropentanoic acid (PFPeA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluoropentanoic acid (PFPeA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorohexanoic acid (PFHxA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorohexanoic acid (PFHxA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-28
Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorooctanoic acid (PFOA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorooctanoic acid (PFOA)	**4.82**	**H I B**	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorononanoic acid (PFNA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorononanoic acid (PFNA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorodecanoic acid (PFDA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorodecanoic acid (PFDA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluoroundecanoic acid (PFUnA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorododecanoic acid (PFDoA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorotridecanoic acid (PFTriA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorotridecanoic acid (PFTriA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorononanesulfonic acid (PFNS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorononanesulfonic acid (PFNS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
Perfluorooctanesulfonamide (FOSA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
Perfluorooctanesulfonamide (FOSA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
4:2 FTS	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
4:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
6:2 FTS	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
6:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
8:2 FTS	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
8:2 FTS	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-28

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
HFPO-DA (GenX)	**4.11**		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
HFPO-DA (GenX)	**9.44**	**H B ***	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
F-53B Major	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
F-53B Major	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1
F-53B Minor	ND		2.01	1.97	ng/Sample		11/07/19 13:00	11/17/19 01:11	1
F-53B Minor	ND	H	2.01	1.97	ng/Sample		10/22/19 17:20	12/20/19 22:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C4 PFBA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C5 PFPeA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C2 PFHxA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C2 PFHxA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C4 PFHpA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C4 PFHpA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C4 PFOA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C4 PFOA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C5 PFNA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C2 PFDA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C2 PFDA	*41*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C2 PFUnA	*110*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C2 PFUnA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C2 PFDoA	*112*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C2 PFDoA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C2 PFTeDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C2 PFTeDA	*59*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
18O2 PFHxS	*119*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
18O2 PFHxS	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C4 PFOS	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C4 PFOS	*79*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C8 FOSA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C8 FOSA	*84*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
M2-6:2 FTS	*104*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
M2-6:2 FTS	*108*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
M2-8:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
M2-8:2 FTS	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
M2-4:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
M2-4:2 FTS	*58*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*
13C3 HFPO-DA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:11*	*1*
13C3 HFPO-DA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:47*	*1*

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND
Lab Sample ID: 140-17067-28

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.04	X	50 - 150	11/07/19 13:00	01/09/20 15:48	1
13C8 PFOS	0	X	50 - 150	11/07/19 13:00	01/09/20 15:48	1

Client Sample ID: A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE
Lab Sample ID: 140-17067-29

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.73**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C5 PFPeA	81		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C2 PFHxA	85		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C4 PFHpA	86		25 - 150	11/08/19 14:30	12/06/19 10:32	1

Client Sample ID: A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-29

Date Collected: 10/17/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	90		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C5 PFNA	85		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C2 PFDA	86		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C2 PFUnA	84		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C2 PFDoA	95		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C2 PFTeDA	91		25 - 150	11/08/19 14:30	12/06/19 10:32	1
18O2 PFHxS	85		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C4 PFOS	82		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C8 FOSA	83		25 - 150	11/08/19 14:30	12/06/19 10:32	1
d3-NMeFOSAA	97		25 - 150	11/08/19 14:30	12/06/19 10:32	1
d5-NEtFOSAA	105		25 - 150	11/08/19 14:30	12/06/19 10:32	1
M2-6:2 FTS	96		25 - 150	11/08/19 14:30	12/06/19 10:32	1
M2-8:2 FTS	85		25 - 150	11/08/19 14:30	12/06/19 10:32	1
M2-4:2 FTS	92		25 - 150	11/08/19 14:30	12/06/19 10:32	1
13C3 HFPO-DA	86		25 - 150	11/08/19 14:30	12/06/19 10:32	1

Client Sample ID: A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-30

Date Collected: 10/17/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorohexanoic acid (PFHxA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorooctanoic acid (PFOA)	**1.23**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorodecanoic acid (PFDA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorobutanesulfonic acid (PFBS)	**22.4**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorohexanesulfonic acid (PFHxS)	**9.08**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1

Client Sample ID: A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-17067-30
Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
HFPO-DA (GenX)	**19.3**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 16:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C5 PFPeA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C2 PFHxA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C4 PFHpA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C4 PFOA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C5 PFNA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C2 PFDA	*41*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C2 PFUnA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C2 PFDoA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C2 PFTeDA	*62*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
18O2 PFHxS	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C4 PFOS	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C8 FOSA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
d3-NMeFOSAA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
d5-NEtFOSAA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
M2-6:2 FTS	*172*	*	*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
M2-8:2 FTS	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
M2-4:2 FTS	*69*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*
13C3 HFPO-DA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 16:48*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.00**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorohexanoic acid (PFHxA)	**1.57**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluoroheptanoic acid (PFHpA)	**1.28**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorooctanoic acid (PFOA)	**1.04**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1

Client Sample ID: A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-17067-30
Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
HFPO-DA (GenX)	**40.7**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C5 PFPeA	*83*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C4 PFHpA	*90*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C4 PFOA	*94*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C5 PFNA	*88*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C2 PFDA	*96*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C2 PFUnA	*102*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C2 PFDoA	*112*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
18O2 PFHxS	*78*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C4 PFOS	*76*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
M2-6:2 FTS	*96*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
M2-4:2 FTS	*108*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*
13C3 HFPO-DA	*72*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:22*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*105*		*50 - 150*	*10/23/19 16:00*	*01/09/20 12:08*	*1*
13C8 PFOS	*72*		*50 - 150*	*10/23/19 16:00*	*01/09/20 12:08*	*1*

Default Detection Limits

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	13C8PFOA (50-150)	PFOS (50-150)
140-17067-7 - RERA	E-1314,1315 R2 M0010 BH	101	85
140-17067-8 - RA	E-1316 R2 M0010 IMP 1,2&3 COND	0.05 X	0.008 X
140-17067-10 - RERA	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	113	96
140-17067-17 - RERA	E-1328,1329 R4 M0010 BH	100	90
140-17067-18 - RA	E-1330 R4 M0010 IMP 1,2&3 COND	0.06 X	0 X
140-17067-20 - RERA	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	108	86
140-17067-27 - RERA	A-6621,6622 R6 M0010 BH	104	77
140-17067-28 - RA	A-6623 R6 M0010 IMP 1,2&3 COND	0.04 X	0 X
140-17067-30 - RERA	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	105	72

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	0.3 *	0.2 *	0.2 *	0.2 *	0.4 *	0.2 *	0.2 *	0.2 *
140-17067-6	E-1312,1313 R2 M0010 FH	62	63	63	63	60	56	56	55
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	54	71	83	85	89	87	95	100
140-17067-7	E-1314,1315 R2 M0010 BH	52	49	49	51	49	52	42	45
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	100	99	105	108	107	113	115	108
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	49	49	52	52	53	49	40	44
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE	91	90	89	93	94	90	95	91
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	55	75	88	89	101	92	104	111
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	52	50	53	53	50	52	42	47
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	2 *	1 *	1 *	1 *	1 *	0.8 *	0.8 *	0.8 *
140-17067-16	E-1326,1327 R4 M0010 FH	60	61	59	60	59	53	53	51
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	50	67	78	81	89	87	93	98
140-17067-17	E-1328,1329 R4 M0010 BH	49	46	48	48	47	45	40	44
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	102	103	103	111	108	111	111	105
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	50	51	50	52	51	50	41	44
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE	91	87	95	91	95	90	90	89
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	57	73	83	87	95	90	96	99
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	54	51	53	55	52	52	43	47
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	1 *	1 *	1 *	0.8 *	0.9 *	0.7 *	0.7 *	0.5 *
140-17067-26	A-6619,6620 R6 M0010 FH	57	56	57	58	56	52	50	48
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	69	74	87	84	90	88	92	97
140-17067-27	A-6621,6622 R6 M0010 BH	53	49	49	56	51	56	44	47
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	103	103	108	111	108	112	113	110
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	50	50	53	53	53	50	41	47
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE	84	81	85	86	90	85	86	84
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	79	83	93	90	94	88	96	102
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	51	49	51	54	50	54	41	45
LCS 320-332701/2-D	Lab Control Sample	51	50	52	51	48	51	41	47
LCS 320-332701/3-D	Lab Control Sample	51	48	51	52	50	52	41	45
LCS 320-332701/4-D	Lab Control Sample	54	52	53	51	51	54	42	47
LCS 320-332801/2-C	Lab Control Sample	50	51	56	72	81	74	65	70
LCS 320-332801/3-C	Lab Control Sample	51	50	59	69	73	69	59	66
LCS 320-332801/4-C	Lab Control Sample	48	49	53	65	73	71	65	72

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
LCS 320-333418/2-C	Lab Control Sample	0.4 *	0.3 *	0.4 *	0.4 *	0.6 *	0.4 *	0.4 *	0.3 *
LCS 320-333418/2-D	Lab Control Sample	58	56	57	58	55	52	51	51
LCS 320-333418/3-C	Lab Control Sample	0.4 *	0.4 *	0.4 *	0.3 *	0.5 *	0.3 *	0.2 *	0.2 *
LCS 320-333418/3-D	Lab Control Sample	58	57	56	58	55	51	52	49
LCS 320-333418/4-C	Lab Control Sample	0.3 *	0.2 *	0.2 *	0.2 *	0.5 *	0.2 *	0.2 *	0.2 *
LCS 320-333418/4-D	Lab Control Sample	62	64	65	64	62	57	57	54
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-336904/2-C	Lab Control Sample	102	98	103	103	97	93	94	91
LCS 320-336904/3-C	Lab Control Sample	101	94	103	102	96	92	94	88
LCS 320-336904/4-C	Lab Control Sample	99	95	101	96	94	91	94	90
MB 320-332701/1-D	Method Blank	50	46	49	47	46	47	37	44
MB 320-332801/1-C	Method Blank	52	52	57	70	74	70	61	68
MB 320-333418/1-C	Method Blank	1 *	1 *	1 *	1 *	1 *	1 *	1 *	1 *
MB 320-333418/1-D	Method Blank	58	58	56	58	57	49	51	52
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-336904/1-C	Method Blank	96	91	98	100	93	88	90	87

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	0.2 *	0.2 *	0.2 *	0.1 *	0.2 *	0.2 *	0.1 *	0 *
140-17067-6	E-1312,1313 R2 M0010 FH	59	60	68	56	56	51	56	79
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	107	100	94	92	0.5 *	18 *	13 *	122
140-17067-7	E-1314,1315 R2 M0010 BH	46	58	51	45	91	81	96	151 *
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	116	98	118	107	109	95	95	125
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	45	53	56	79	81	77	85	107
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE	101	102	90	87	94	104	118	98
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	119	113	97	95	0.7 *	11 *	7 *	125
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	47	65	51	49	87	85	86	165 *
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	0.6 *	0.7 *	0.3 *	0.4 *	0.1 *	0.4 *	0.3 *	2 *
140-17067-16	E-1326,1327 R4 M0010 FH	55	54	64	50	51	45	52	76
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	107	103	92	89	0.1 *	8 *	4 *	122
140-17067-17	E-1328,1329 R4 M0010 BH	41	60	49	40	83	91	99	140
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	108	111	119	106	103	91	89	115
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	44	51	64	86	85	78	86	103
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE	98	93	90	86	92	101	112	88
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	107	98	95	89	0.6 *	6 *	5 *	116
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	49	65	53	48	87	86	85	152 *

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	0.7 *	0.5 *	0.07 *	0.06 *	0.07 *	8 *	5 *	0.7 *
140-17067-26	A-6619,6620 R6 M0010 FH	53	54	59	50	50	48	50	68
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	101	100	87	82	66	88	92	104
140-17067-27	A-6621,6622 R6 M0010 BH	46	60	53	51	50	51	55	154 *
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	112	110	119	109	107	97	92	104
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	46	59	54	79	84	77	89	108
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE	95	91	85	82	83	97	105	96
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	112	104	78	76	79	93	104	96
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	45	62	53	48	46	51	52	172 *
LCS 320-332701/2-D	Lab Control Sample	46	60	52	48	48	51	53	161 *
LCS 320-332701/3-D	Lab Control Sample	45	61	53	47	49	50	53	157 *
LCS 320-332701/4-D	Lab Control Sample	45	60	54	46	51	48	53	172 *
LCS 320-332801/2-C	Lab Control Sample	76	89	60	85	81	94	99	92
LCS 320-332801/3-C	Lab Control Sample	72	81	59	82	81	87	88	90
LCS 320-332801/4-C	Lab Control Sample	79	91	58	81	83	89	88	90
LCS 320-333418/2-C	Lab Control Sample	0.3 *	0.4 *	0.3 *	0.4 *	0.2 *	0.6 *	0.6 *	0.4 *
LCS 320-333418/2-D	Lab Control Sample	53	55	61	49	52	46	53	71
LCS 320-333418/3-C	Lab Control Sample	0.3 *	0.3 *	0.2 *	0.2 *	0.2 *	0.4 *	0.5 *	0.5 *
LCS 320-333418/3-D	Lab Control Sample	54	55	61	50	50	47	51	66
LCS 320-333418/4-C	Lab Control Sample	0.2 *	0.2 *	0.2 *	0.2 *	0.2 *	0.3 *	0.4 *	0.1 *
LCS 320-333418/4-D	Lab Control Sample	61	62	67	54	57	54	55	81
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-336904/2-C	Lab Control Sample	100	98	103	86	79	87	93	114
LCS 320-336904/3-C	Lab Control Sample	93	88	96	79	75	85	93	104
LCS 320-336904/4-C	Lab Control Sample	95	94	94	82	77	85	95	103
MB 320-332701/1-D	Method Blank	43	54	48	42	46	43	48	144
MB 320-332801/1-C	Method Blank	70	80	64	85	86	84	88	97
MB 320-333418/1-C	Method Blank	1 *	1 *	4 *	3 *	0.5 *	2 *	1 *	2 *
MB 320-333418/1-D	Method Blank	53	53	60	50	52	45	49	59
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-336904/1-C	Method Blank	93	90	89	78	78	80	91	105

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	0.4 *	0.3 *	0.09 *
140-17067-6	E-1312,1313 R2 M0010 FH	62	54	62
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	120	127	65
140-17067-7	E-1314,1315 R2 M0010 BH	55	63	47
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	117	104	95
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	52	50	54

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17067-9	E-1317 R2 M0010 IMP GLASSV	95	96	85
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	133	139	72
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESI TUBE	51	62	48
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	2 *	3 *	0.4 *
140-17067-16	E-1326,1327 R4 M0010 FH	64	49	58
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	113	131	68
140-17067-17	E-1328,1329 R4 M0010 BH	50	57	47
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	97	93	106
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	61	61	41
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE	86	92	91
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	119	124	69
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESI TUBE	57	61	46
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	0.9 *	1 *	0.2 *
140-17067-26	A-6619,6620 R6 M0010 FH	53	48	59
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	103	117	70
140-17067-27	A-6621,6622 R6 M0010 BH	60	67	47
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	97	97	98
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	47	58	49
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE	85	92	86
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	95	108	72
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESI TUBE	54	69	51
LCS 320-332701/2-D	Lab Control Sample	48	58	41
LCS 320-332701/3-D	Lab Control Sample	46	64	51
LCS 320-332701/4-D	Lab Control Sample	47	68	52
LCS 320-332801/2-C	Lab Control Sample	52	45	51
LCS 320-332801/3-C	Lab Control Sample	52	48	61
LCS 320-332801/4-C	Lab Control Sample	49	49	52
LCS 320-333418/2-C	Lab Control Sample	0.7 *	0.6 *	0.3 *
LCS 320-333418/2-D	Lab Control Sample	58	47	55
LCS 320-333418/3-C	Lab Control Sample	0.3 *	0.6 *	0.4 *
LCS 320-333418/3-D	Lab Control Sample	58	48	59
LCS 320-333418/4-C	Lab Control Sample	0 *	0 *	0 *
LCS 320-333418/4-D	Lab Control Sample	61	53	61
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112
LCS 320-336668/4-B	Lab Control Sample	98	90	118

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)						
LCS 320-336904/2-C	Lab Control Sample	107	125	85						
LCS 320-336904/3-C	Lab Control Sample	97	109	94						
LCS 320-336904/4-C	Lab Control Sample	106	108	83						
MB 320-332701/1-D	Method Blank	45	57	48						
MB 320-332801/1-C	Method Blank	53	48	56						
MB 320-333418/1-C	Method Blank	1 *	2 *	0.4 *						
MB 320-333418/1-D	Method Blank	55	47	60						
MB 320-336668/1-B	Method Blank	84	93	113						
MB 320-336904/1-C	Method Blank	109	110	81						

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-332701/1-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332701

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.993		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanoic acid (PFOA)	1.728		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
HFPO-DA (GenX)	10.20		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C5 PFPeA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFHxA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFHpA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFOA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C5 PFNA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFDA	*37*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFDoA	*43*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
18O2 PFHxS	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFOS	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C8 FOSA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
d3-NMeFOSAA	*43*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
d5-NEtFOSAA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*

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

Lab Sample ID: MB 320-332701/1-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332701

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	144		25 - 150	10/22/19 17:20	12/20/19 15:17	1
M2-8:2 FTS	45		25 - 150	10/22/19 17:20	12/20/19 15:17	1
M2-4:2 FTS	57		25 - 150	10/22/19 17:20	12/20/19 15:17	1
13C3 HFPO-DA	48		25 - 150	10/22/19 17:20	12/20/19 15:17	1

Lab Sample ID: LCS 320-332701/2-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	9.652	*	ng/Sample		24	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	9.436	*	ng/Sample		24	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	9.964	*	ng/Sample		25	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	9.461	*	ng/Sample		24	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	11.57	*	ng/Sample		29	64 - 124
Perfluorononanoic acid (PFNA)	40.0	11.02	*	ng/Sample		28	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	10.73	*	ng/Sample		27	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	10.08	*	ng/Sample		25	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	11.94	*	ng/Sample		30	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	12.23	*	ng/Sample		31	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	11.84	*	ng/Sample		30	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	3.254	*	ng/Sample		9	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	3.770	*	ng/Sample		10	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	4.077	*	ng/Sample		11	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	4.356	*	ng/Sample		11	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	4.245	*	ng/Sample		11	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	3.555	*	ng/Sample		9	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	4.270	*	ng/Sample		11	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	8.855	*	ng/Sample		22	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	17.10	*	ng/Sample		43	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	16.23	*	ng/Sample		41	65 - 125
4:2 FTS	37.4	7.369	*	ng/Sample		20	70 - 130
6:2 FTS	37.9	7.875	*	ng/Sample		21	66 - 126
8:2 FTS	38.3	8.289	*	ng/Sample		22	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	11.23	*	ng/Sample		30	70 - 130
HFPO-DA (GenX)	40.0	113.9	*	ng/Sample		285	70 - 130
F-53B Major	37.3	4.566	*	ng/Sample		12	70 - 130
F-53B Minor	37.7	6.369	*	ng/Sample		17	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	51		25 - 150
13C5 PFPeA	50		25 - 150
13C2 PFHxA	52		25 - 150
13C4 PFHpA	51		25 - 150
13C4 PFOA	48		25 - 150
13C5 PFNA	51		25 - 150
13C2 PFDA	41		25 - 150
13C2 PFUnA	47		25 - 150
13C2 PFDoA	46		25 - 150
13C2 PFTeDA	60		25 - 150
18O2 PFHxS	52		25 - 150
13C4 PFOS	48		25 - 150
13C8 FOSA	48		25 - 150
d3-NMeFOSAA	51		25 - 150
d5-NEtFOSAA	53		25 - 150
M2-6:2 FTS	161	*	25 - 150
M2-8:2 FTS	48		25 - 150
M2-4:2 FTS	58		25 - 150
13C3 HFPO-DA	41		25 - 150

Lab Sample ID: LCS 320-332701/3-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	7.335	*	ng/Sample		18	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	5.175	*	ng/Sample		13	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	5.769	*	ng/Sample		14	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	5.213	*	ng/Sample		13	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	6.844	*	ng/Sample		17	64 - 124
Perfluorononanoic acid (PFNA)	40.0	6.518	*	ng/Sample		16	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	6.492	*	ng/Sample		16	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	6.340	*	ng/Sample		16	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	6.788	*	ng/Sample		17	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	7.122	*	ng/Sample		18	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	6.277	*	ng/Sample		16	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	1.166	*	ng/Sample		3	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	1.113	*	ng/Sample		3	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	1.797	*	ng/Sample		5	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	1.135	*	ng/Sample		3	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	1.537	*	ng/Sample		4	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	1.032	*	ng/Sample		3	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	1.531	*	ng/Sample		4	68 - 128

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

Lab Sample ID: LCS 320-332701/3-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	3.625	*	ng/Sample		9	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	7.882	*	ng/Sample		20	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	8.269	*	ng/Sample		21	65 - 125
4:2 FTS	37.4	3.703	*	ng/Sample		10	70 - 130
6:2 FTS	37.9	4.981	*	ng/Sample		13	66 - 126
8:2 FTS	38.3	5.431	*	ng/Sample		14	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	6.580	*	ng/Sample		17	70 - 130
HFPO-DA (GenX)	40.0	24.48	*	ng/Sample		61	70 - 130
F-53B Major	37.3	1.683	*	ng/Sample		5	70 - 130
F-53B Minor	37.7	2.454	*	ng/Sample		7	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*51*		*25 - 150*
13C5 PFPeA	*48*		*25 - 150*
13C2 PFHxA	*51*		*25 - 150*
13C4 PFHpA	*52*		*25 - 150*
13C4 PFOA	*50*		*25 - 150*
13C5 PFNA	*52*		*25 - 150*
13C2 PFDA	*41*		*25 - 150*
13C2 PFUnA	*45*		*25 - 150*
13C2 PFDoA	*45*		*25 - 150*
13C2 PFTeDA	*61*		*25 - 150*
18O2 PFHxS	*53*		*25 - 150*
13C4 PFOS	*47*		*25 - 150*
13C8 FOSA	*49*		*25 - 150*
d3-NMeFOSAA	*50*		*25 - 150*
d5-NEtFOSAA	*53*		*25 - 150*
M2-6:2 FTS	*157*	*	*25 - 150*
M2-8:2 FTS	*46*		*25 - 150*
M2-4:2 FTS	*64*		*25 - 150*
13C3 HFPO-DA	*51*		*25 - 150*

Lab Sample ID: LCS 320-332701/4-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	6.752	*	ng/Sample		17	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	5.190	*	ng/Sample		13	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	5.825	*	ng/Sample		15	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	5.722	*	ng/Sample		14	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	7.065	*	ng/Sample		18	64 - 124
Perfluorononanoic acid (PFNA)	40.0	6.406	*	ng/Sample		16	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	6.627	*	ng/Sample		17	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	6.337	*	ng/Sample		16	60 - 120

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

Lab Sample ID: LCS 320-332701/4-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	7.637	*	ng/Sample		19	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	7.842	*	ng/Sample		20	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	7.202	*	ng/Sample		18	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	1.041	*	ng/Sample		3	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	1.214	*	ng/Sample		3	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	1.652	*	ng/Sample		5	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	1.549	*	ng/Sample		4	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	1.393	*	ng/Sample		4	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	1.505	*	ng/Sample		4	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	1.519	*	ng/Sample		4	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	3.841	*	ng/Sample		10	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	11.14	*	ng/Sample		28	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	10.55	*	ng/Sample		26	65 - 125
4:2 FTS	37.4	3.778	*	ng/Sample		10	70 - 130
6:2 FTS	37.9	4.708	*	ng/Sample		12	66 - 126
8:2 FTS	38.3	6.381	*	ng/Sample		17	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	7.141	*	ng/Sample		19	70 - 130
HFPO-DA (GenX)	40.0	4.858	*	ng/Sample		12	70 - 130
F-53B Major	37.3	1.559	*	ng/Sample		4	70 - 130
F-53B Minor	37.7	2.545	*	ng/Sample		7	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*54*		*25 - 150*
13C5 PFPeA	*52*		*25 - 150*
13C2 PFHxA	*53*		*25 - 150*
13C4 PFHpA	*51*		*25 - 150*
13C4 PFOA	*51*		*25 - 150*
13C5 PFNA	*54*		*25 - 150*
13C2 PFDA	*42*		*25 - 150*
13C2 PFUnA	*47*		*25 - 150*
13C2 PFDoA	*45*		*25 - 150*
13C2 PFTeDA	*60*		*25 - 150*
18O2 PFHxS	*54*		*25 - 150*
13C4 PFOS	*46*		*25 - 150*
13C8 FOSA	*51*		*25 - 150*
d3-NMeFOSAA	*48*		*25 - 150*
d5-NEtFOSAA	*53*		*25 - 150*
M2-6:2 FTS	*172*	*	*25 - 150*

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

Lab Sample ID: LCS 320-332701/4-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	*47*		*25 - 150*
M2-4:2 FTS	*68*		*25 - 150*
13C3 HFPO-DA	*52*		*25 - 150*

Lab Sample ID: MB 320-332801/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332801

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.806		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanoic acid (PFOA)	1.863	I	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
HFPO-DA (GenX)	1.535		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C5 PFPeA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFHxA	*57*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C4 PFHpA	*70*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C4 PFOA	*74*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C5 PFNA	*70*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*

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

Lab Sample ID: MB 320-332801/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332801

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	61		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C2 PFUnA	68		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C2 PFDoA	70		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C2 PFTeDA	80		25 - 150	10/22/19 17:20	12/20/19 21:47	1
18O2 PFHxS	64		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C4 PFOS	85		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C8 FOSA	86		25 - 150	10/22/19 17:20	12/20/19 21:47	1
d3-NMeFOSAA	84		25 - 150	10/22/19 17:20	12/20/19 21:47	1
d5-NEtFOSAA	88		25 - 150	10/22/19 17:20	12/20/19 21:47	1
M2-6:2 FTS	97		25 - 150	10/22/19 17:20	12/20/19 21:47	1
M2-8:2 FTS	53		25 - 150	10/22/19 17:20	12/20/19 21:47	1
M2-4:2 FTS	48		25 - 150	10/22/19 17:20	12/20/19 21:47	1
13C3 HFPO-DA	56		25 - 150	10/22/19 17:20	12/20/19 21:47	1

Lab Sample ID: LCS 320-332801/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	2.812	*	ng/Sample		7	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.281	*	ng/Sample		3	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	12.08	*	ng/Sample		30	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	26.98		ng/Sample		67	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	34.53		ng/Sample		86	64 - 124
Perfluorononanoic acid (PFNA)	40.0	38.08		ng/Sample		95	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	35.69		ng/Sample		89	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	35.85		ng/Sample		90	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	38.10		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	49.84		ng/Sample		125	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	38.73		ng/Sample		97	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0.8	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	2.416	*	ng/Sample		6	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	11.26	*	ng/Sample		31	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	29.79		ng/Sample		78	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	32.26		ng/Sample		87	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	32.48		ng/Sample		85	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	35.42		ng/Sample		92	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	36.18		ng/Sample		90	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.97		ng/Sample		112	67 - 127

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

Lab Sample ID: LCS 320-332801/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.75		ng/Sample		102	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		1	66 - 126
8:2 FTS	38.3	15.32	*	ng/Sample		40	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	10.97	*	ng/Sample		29	70 - 130
HFPO-DA (GenX)	40.0	30.23		ng/Sample		76	70 - 130
F-53B Major	37.3	35.06		ng/Sample		94	70 - 130
F-53B Minor	37.7	45.26		ng/Sample		120	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*50*		*25 - 150*
13C5 PFPeA	*51*		*25 - 150*
13C2 PFHxA	*56*		*25 - 150*
13C4 PFHpA	*72*		*25 - 150*
13C4 PFOA	*81*		*25 - 150*
13C5 PFNA	*74*		*25 - 150*
13C2 PFDA	*65*		*25 - 150*
13C2 PFUnA	*70*		*25 - 150*
13C2 PFDoA	*76*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
18O2 PFHxS	*60*		*25 - 150*
13C4 PFOS	*85*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*94*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
M2-6:2 FTS	*92*		*25 - 150*
M2-8:2 FTS	*52*		*25 - 150*
M2-4:2 FTS	*45*		*25 - 150*
13C3 HFPO-DA	*51*		*25 - 150*

Lab Sample ID: LCS 320-332801/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	3.989	*	ng/Sample		10	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.546	*	ng/Sample		4	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	11.77	*	ng/Sample		29	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	23.52	*	ng/Sample		59	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	30.01		ng/Sample		75	64 - 124
Perfluorononanoic acid (PFNA)	40.0	31.09		ng/Sample		78	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	31.71		ng/Sample		79	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	29.22		ng/Sample		73	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	36.55		ng/Sample		91	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	43.96		ng/Sample		110	72 - 132

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

Lab Sample ID: LCS 320-332801/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorotetradecanoic acid (PFTeA)	40.0	36.96		ng/Sample		92	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		1	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	2.341	*	ng/Sample		6	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	10.77	*	ng/Sample		30	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	28.29		ng/Sample		74	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	30.34		ng/Sample		82	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	30.49		ng/Sample		79	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	33.61		ng/Sample		87	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	35.75		ng/Sample		89	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.84		ng/Sample		90	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	35.17		ng/Sample		88	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		1	66 - 126
8:2 FTS	38.3	12.93	*	ng/Sample		34	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	13.52	*	ng/Sample		36	70 - 130
HFPO-DA (GenX)	40.0	13.61	*	ng/Sample		34	70 - 130
F-53B Major	37.3	34.26		ng/Sample		92	70 - 130
F-53B Minor	37.7	44.55		ng/Sample		118	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*51*		*25 - 150*
13C5 PFPeA	*50*		*25 - 150*
13C2 PFHxA	*59*		*25 - 150*
13C4 PFHpA	*69*		*25 - 150*
13C4 PFOA	*73*		*25 - 150*
13C5 PFNA	*69*		*25 - 150*
13C2 PFDA	*59*		*25 - 150*
13C2 PFUnA	*66*		*25 - 150*
13C2 PFDoA	*72*		*25 - 150*
13C2 PFTeDA	*81*		*25 - 150*
18O2 PFHxS	*59*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
M2-6:2 FTS	*90*		*25 - 150*
M2-8:2 FTS	*52*		*25 - 150*
M2-4:2 FTS	*48*		*25 - 150*
13C3 HFPO-DA	*61*		*25 - 150*

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

Lab Sample ID: LCS 320-332801/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	4.134	*	ng/Sample		10	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.036	*	ng/Sample		3	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	7.796	*	ng/Sample		19	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	21.78	*	ng/Sample		54	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	29.46		ng/Sample		74	64 - 124
Perfluorononanoic acid (PFNA)	40.0	35.91		ng/Sample		90	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	35.24		ng/Sample		88	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	36.87		ng/Sample		92	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	40.20		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	49.86		ng/Sample		125	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	40.88		ng/Sample		102	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0.7	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	1.864	*	ng/Sample		5	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	10.52	*	ng/Sample		29	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	27.07		ng/Sample		71	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	31.02		ng/Sample		84	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	31.49		ng/Sample		82	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	36.79		ng/Sample		95	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	34.97		ng/Sample		87	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.92		ng/Sample		92	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.67		ng/Sample		92	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.7	66 - 126
8:2 FTS	38.3	8.998	*	ng/Sample		23	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	13.39	*	ng/Sample		36	70 - 130
HFPO-DA (GenX)	40.0	8.918	*	ng/Sample		22	70 - 130
F-53B Major	37.3	36.98		ng/Sample		99	70 - 130
F-53B Minor	37.7	43.85		ng/Sample		116	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*48*		*25 - 150*
13C5 PFPeA	*49*		*25 - 150*
13C2 PFHxA	*53*		*25 - 150*
13C4 PFHpA	*65*		*25 - 150*
13C4 PFOA	*73*		*25 - 150*
13C5 PFNA	*71*		*25 - 150*
13C2 PFDA	*65*		*25 - 150*

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

Lab Sample ID: LCS 320-332801/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	72		25 - 150
13C2 PFDoA	79		25 - 150
13C2 PFTeDA	91		25 - 150
18O2 PFHxS	58		25 - 150
13C4 PFOS	81		25 - 150
13C8 FOSA	83		25 - 150
d3-NMeFOSAA	89		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	49		25 - 150
M2-4:2 FTS	49		25 - 150
13C3 HFPO-DA	52		25 - 150

Lab Sample ID: MB 320-333418/1-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	78.34		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoropentanoic acid (PFPeA)	32.41		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroheptanoic acid (PFHpA)	22.30		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanoic acid (PFOA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorododecanoic acid (PFDoA)	19.97		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorohexanesulfonic acid (PFHxS)	6.312		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanesulfonamide (FOSA)	38.80		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.84		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	33.75		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
4:2 FTS	8.296		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
6:2 FTS	15.82		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
8:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	4.724		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
HFPO-DA (GenX)	237.6		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
F-53B Major	4.917		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1

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

Lab Sample ID: MB 320-333418/1-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	6.393		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C5 PFPeA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFHxA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFHpA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFOA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C5 PFNA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFDA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFUnA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFDoA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFTeDA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
18O2 PFHxS	*4*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFOS	*3*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C8 FOSA	*0.5*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
d3-NMeFOSAA	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
d5-NEtFOSAA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-6:2 FTS	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-8:2 FTS	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-4:2 FTS	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C3 HFPO-DA	*0.4*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*

Lab Sample ID: MB 320-333418/1-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.230		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanoic acid (PFOA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1

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

Lab Sample ID: MB 320-333418/1-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
4:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
6:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
8:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
HFPO-DA (GenX)	2.568		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
F-53B Major	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
F-53B Minor	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C5 PFPeA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFHxA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFHpA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFOA	*57*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C5 PFNA	*49*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFDA	*51*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFUnA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFDoA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFTeDA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
18O2 PFHxS	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFOS	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C8 FOSA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
d3-NMeFOSAA	*45*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
d5-NEtFOSAA	*49*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
M2-6:2 FTS	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
M2-8:2 FTS	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
M2-4:2 FTS	*47*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C3 HFPO-DA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*

Lab Sample ID: LCS 320-333418/2-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	140.8	*	ng/Sample		352	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	56.95	*	ng/Sample		142	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.08		ng/Sample		103	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	57.72	I *	ng/Sample		144	60 - 140
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140

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

Lab Sample ID: LCS 320-333418/2-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	25.81		ng/Sample		69	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.41		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	18.80	*	ng/Sample		49	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	55.05	I *	ng/Sample		148	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	32.53		ng/Sample		84	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	80.14	*	ng/Sample		200	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	28.45		ng/Sample		71	60 - 140
4:2 FTS	37.4	35.36		ng/Sample		95	60 - 140
6:2 FTS	37.9	93.92	*	ng/Sample		248	60 - 140
8:2 FTS	38.3	32.02		ng/Sample		84	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	28.92		ng/Sample		77	60 - 140
HFPO-DA (GenX)	40.0	120.8	*	ng/Sample		302	60 - 140
F-53B Major	37.3	19.17	*	ng/Sample		51	60 - 140
F-53B Minor	37.7	24.95		ng/Sample		66	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*0.4*	*	*25 - 150*
13C5 PFPeA	*0.3*	*	*25 - 150*
13C2 PFHxA	*0.4*	*	*25 - 150*
13C4 PFHpA	*0.4*	*	*25 - 150*
13C4 PFOA	*0.6*	*	*25 - 150*
13C5 PFNA	*0.4*	*	*25 - 150*
13C2 PFDA	*0.4*	*	*25 - 150*
13C2 PFUnA	*0.3*	*	*25 - 150*
13C2 PFDoA	*0.3*	*	*25 - 150*
13C2 PFTeDA	*0.4*	*	*25 - 150*
18O2 PFHxS	*0.3*	*	*25 - 150*
13C4 PFOS	*0.4*	*	*25 - 150*
13C8 FOSA	*0.2*	*	*25 - 150*
d3-NMeFOSAA	*0.6*	*	*25 - 150*
d5-NEtFOSAA	*0.6*	*	*25 - 150*
M2-6:2 FTS	*0.4*	*	*25 - 150*
M2-8:2 FTS	*0.7*	*	*25 - 150*
M2-4:2 FTS	*0.6*	*	*25 - 150*

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

Lab Sample ID: LCS 320-333418/2-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C3 HFPO-DA	0.3	*	25 - 150

Lab Sample ID: LCS 320-333418/2-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	3.014	*	ng/Sample		8	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	ND	*	ng/Sample		0.9	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	ND	*	ng/Sample		2	64 - 124
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		2	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.5	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.2	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		0.4	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0	70 - 130
HFPO-DA (GenX)	40.0	3.167	*	ng/Sample		8	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0.2	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	58		25 - 150

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

Lab Sample ID: LCS 320-333418/2-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C5 PFPeA	56		25 - 150
13C2 PFHxA	57		25 - 150
13C4 PFHpA	58		25 - 150
13C4 PFOA	55		25 - 150
13C5 PFNA	52		25 - 150
13C2 PFDA	51		25 - 150
13C2 PFUnA	51		25 - 150
13C2 PFDoA	53		25 - 150
13C2 PFTeDA	55		25 - 150
18O2 PFHxS	61		25 - 150
13C4 PFOS	49		25 - 150
13C8 FOSA	52		25 - 150
d3-NMeFOSAA	46		25 - 150
d5-NEtFOSAA	53		25 - 150
M2-6:2 FTS	71		25 - 150
M2-8:2 FTS	58		25 - 150
M2-4:2 FTS	47		25 - 150
13C3 HFPO-DA	55		25 - 150

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	241.2	*	ng/Sample		603	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	33.02		ng/Sample		83	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	53.28	I	ng/Sample		133	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	44.31		ng/Sample		111	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	59.58	I *	ng/Sample		149	60 - 140
Perfluorononanoic acid (PFNA)	40.0	50.30		ng/Sample		126	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	71.08	*	ng/Sample		178	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	48.46		ng/Sample		137	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.82	I	ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	27.12		ng/Sample		71	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	58.27	*	ng/Sample		157	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140

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

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanesulfonic acid (PFDS)	38.6	35.73		ng/Sample		93	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	78.97	*	ng/Sample		197	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	31.12		ng/Sample		78	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	23.95		ng/Sample		60	60 - 140
4:2 FTS	37.4	24.78		ng/Sample		66	60 - 140
6:2 FTS	37.9	53.66	*	ng/Sample		142	60 - 140
8:2 FTS	38.3	ND	*	ng/Sample		0	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.03		ng/Sample		104	60 - 140
HFPO-DA (GenX)	40.0	ND	*	ng/Sample		0	60 - 140
F-53B Major	37.3	ND	*	ng/Sample		0	60 - 140
F-53B Minor	37.7	16.46	*	ng/Sample		44	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*0.4*	*	*25 - 150*
13C5 PFPeA	*0.4*	*	*25 - 150*
13C2 PFHxA	*0.4*	*	*25 - 150*
13C4 PFHpA	*0.3*	*	*25 - 150*
13C4 PFOA	*0.5*	*	*25 - 150*
13C5 PFNA	*0.3*	*	*25 - 150*
13C2 PFDA	*0.2*	*	*25 - 150*
13C2 PFUnA	*0.2*	*	*25 - 150*
13C2 PFDoA	*0.3*	*	*25 - 150*
13C2 PFTeDA	*0.3*	*	*25 - 150*
18O2 PFHxS	*0.2*	*	*25 - 150*
13C4 PFOS	*0.2*	*	*25 - 150*
13C8 FOSA	*0.2*	*	*25 - 150*
d3-NMeFOSAA	*0.4*	*	*25 - 150*
d5-NEtFOSAA	*0.5*	*	*25 - 150*
M2-6:2 FTS	*0.5*	*	*25 - 150*
M2-8:2 FTS	*0.3*	*	*25 - 150*
M2-4:2 FTS	*0.6*	*	*25 - 150*
13C3 HFPO-DA	*0.4*	*	*25 - 150*

Lab Sample ID: LCS 320-333418/3-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	2.567	*	ng/Sample		6	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	ND	*	ng/Sample		2	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		1	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	1.217	*	ng/Sample		3	64 - 124
Perfluorononanoic acid (PFNA)	40.0	1.229	*	ng/Sample		3	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	69 - 129

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

Lab Sample ID: LCS 320-333418/3-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0.9	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		1	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0.9	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		2	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.9	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		1	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.9	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		1	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0.9	70 - 130
HFPO-DA (GenX)	40.0	9.336	*	ng/Sample		23	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0.5	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0.5	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*58*		*25 - 150*
13C5 PFPeA	*57*		*25 - 150*
13C2 PFHxA	*56*		*25 - 150*
13C4 PFHpA	*58*		*25 - 150*
13C4 PFOA	*55*		*25 - 150*
13C5 PFNA	*51*		*25 - 150*
13C2 PFDA	*52*		*25 - 150*
13C2 PFUnA	*49*		*25 - 150*
13C2 PFDoA	*54*		*25 - 150*
13C2 PFTeDA	*55*		*25 - 150*
18O2 PFHxS	*61*		*25 - 150*
13C4 PFOS	*50*		*25 - 150*
13C8 FOSA	*50*		*25 - 150*
d3-NMeFOSAA	*47*		*25 - 150*

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

Lab Sample ID: LCS 320-333418/3-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d5-NEtFOSAA	*51*		*25 - 150*
M2-6:2 FTS	*66*		*25 - 150*
M2-8:2 FTS	*58*		*25 - 150*
M2-4:2 FTS	*48*		*25 - 150*
13C3 HFPO-DA	*59*		*25 - 150*

Lab Sample ID: LCS 320-333418/4-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	310.9	*	ng/Sample		777	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	48.36		ng/Sample		121	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	43.41	I	ng/Sample		109	60 - 140
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	53.82		ng/Sample		135	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
4:2 FTS	37.4	ND	*	ng/Sample		0	60 - 140
6:2 FTS	37.9	121.6	*	ng/Sample		321	60 - 140
8:2 FTS	38.3	ND	*	ng/Sample		0	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	53.48	I *	ng/Sample		142	60 - 140
HFPO-DA (GenX)	40.0	ND	*	ng/Sample		0	60 - 140
F-53B Major	37.3	41.47		ng/Sample		111	60 - 140

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

Lab Sample ID: LCS 320-333418/4-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	26.33		ng/Sample		70	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*0.3*	*	*25 - 150*
13C5 PFPeA	*0.2*	*	*25 - 150*
13C2 PFHxA	*0.2*	*	*25 - 150*
13C4 PFHpA	*0.2*	*	*25 - 150*
13C4 PFOA	*0.5*	*	*25 - 150*
13C5 PFNA	*0.2*	*	*25 - 150*
13C2 PFDA	*0.2*	*	*25 - 150*
13C2 PFUnA	*0.2*	*	*25 - 150*
13C2 PFDoA	*0.2*	*	*25 - 150*
13C2 PFTeDA	*0.2*	*	*25 - 150*
18O2 PFHxS	*0.2*	*	*25 - 150*
13C4 PFOS	*0.2*	*	*25 - 150*
13C8 FOSA	*0.2*	*	*25 - 150*
d3-NMeFOSAA	*0.3*	*	*25 - 150*
d5-NEtFOSAA	*0.4*	*	*25 - 150*
M2-6:2 FTS	*0.1*	*	*25 - 150*
M2-8:2 FTS	*0*	*	*25 - 150*
M2-4:2 FTS	*0*	*	*25 - 150*
13C3 HFPO-DA	*0*	*	*25 - 150*

Lab Sample ID: LCS 320-333418/4-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)			40.0	2.180	*	ng/Sample		5	70 - 130		
Perfluoropentanoic acid (PFPeA)			40.0	ND	*	ng/Sample		0.8	66 - 126		
Perfluorohexanoic acid (PFHxA)			40.0	ND	*	ng/Sample		0	66 - 126		
Perfluoroheptanoic acid (PFHpA)			40.0	ND	*	ng/Sample		0.7	66 - 126		
Perfluorooctanoic acid (PFOA)			40.0	ND	*	ng/Sample		2	64 - 124		
Perfluorononanoic acid (PFNA)			40.0	ND	*	ng/Sample		1	68 - 128		
Perfluorodecanoic acid (PFDA)			40.0	ND	*	ng/Sample		0	69 - 129		
Perfluoroundecanoic acid (PFUnA)			40.0	ND	*	ng/Sample		1	60 - 120		
Perfluorododecanoic acid (PFDoA)			40.0	ND	*	ng/Sample		0.5	71 - 131		
Perfluorotridecanoic acid (PFTriA)			40.0	ND	*	ng/Sample		0	72 - 132		
Perfluorotetradecanoic acid (PFTeA)			40.0	ND	*	ng/Sample		0	68 - 128		
Perfluorobutanesulfonic acid (PFBS)			35.4	ND	*	ng/Sample		0	73 - 133		
Perfluoropentanesulfonic acid (PFPeS)			37.5	ND	*	ng/Sample		0	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			36.4	ND	*	ng/Sample		2	63 - 123		
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	ND	*	ng/Sample		0	68 - 128		

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

Lab Sample ID: LCS 320-333418/4-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.5	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		0	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0.1	70 - 130
HFPO-DA (GenX)	40.0	1.802	*	ng/Sample		5	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0.1	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*62*		*25 - 150*
13C5 PFPeA	*64*		*25 - 150*
13C2 PFHxA	*65*		*25 - 150*
13C4 PFHpA	*64*		*25 - 150*
13C4 PFOA	*62*		*25 - 150*
13C5 PFNA	*57*		*25 - 150*
13C2 PFDA	*57*		*25 - 150*
13C2 PFUnA	*54*		*25 - 150*
13C2 PFDoA	*61*		*25 - 150*
13C2 PFTeDA	*62*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*54*		*25 - 150*
13C8 FOSA	*57*		*25 - 150*
d3-NMeFOSAA	*54*		*25 - 150*
d5-NEtFOSAA	*55*		*25 - 150*
M2-6:2 FTS	*81*		*25 - 150*
M2-8:2 FTS	*61*		*25 - 150*
M2-4:2 FTS	*53*		*25 - 150*
13C3 HFPO-DA	*61*		*25 - 150*

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
18O2 PFHxS	*124*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOS	*108*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C8 FOSA	*105*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
M2-6:2 FTS	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
M2-8:2 FTS	*84*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
M2-4:2 FTS	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C3 HFPO-DA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*108*		*25 - 150*
13C2 PFHxA	*107*		*25 - 150*
13C4 PFHpA	*112*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*114*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFUnA	*112*		*25 - 150*
13C2 PFDoA	*116*		*25 - 150*
13C2 PFTeDA	*119*		*25 - 150*
18O2 PFHxS	*122*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C8 FOSA	*104*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
M2-6:2 FTS	*95*		*25 - 150*
M2-8:2 FTS	*100*		*25 - 150*
M2-4:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*106*		*25 - 150*

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.775		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.955		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.584		ng/Sample		92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.746		ng/Sample		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.117		ng/Sample		96	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.036		ng/Sample		97	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.134		ng/Sample		95	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.489		ng/Sample		98	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.940		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	9.906		ng/Sample		99	67 - 127

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.768		ng/Sample		98	65 - 125
4:2 FTS	9.34	9.915		ng/Sample		106	70 - 130
6:2 FTS	9.48	9.822		ng/Sample		104	66 - 126
8:2 FTS	9.58	9.688		ng/Sample		101	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.698		ng/Sample		103	70 - 130
HFPO-DA (GenX)	10.0	10.60		ng/Sample		106	70 - 130
F-53B Major	9.32	9.194		ng/Sample		99	70 - 130
F-53B Minor	9.42	9.238		ng/Sample		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorotetradecanoic acid (PFTeA)			10.0	9.275		ng/Sample		93	68 - 128		
Perfluorobutanesulfonic acid (PFBS)			8.84	8.145		ng/Sample		92	73 - 133		
Perfluoropentanesulfonic acid (PFPeS)			9.38	8.875		ng/Sample		95	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			9.10	8.135		ng/Sample		89	63 - 123		
Perfluoroheptanesulfonic Acid (PFHpS)			9.52	9.753		ng/Sample		102	68 - 128		
Perfluorooctanesulfonic acid (PFOS)			9.28	9.139		ng/Sample		98	67 - 127		
Perfluorononanesulfonic acid (PFNS)			9.60	9.030		ng/Sample		94	70 - 130		
Perfluorodecanesulfonic acid (PFDS)			9.64	9.069		ng/Sample		94	68 - 128		
Perfluorooctanesulfonamide (FOSA)			10.0	9.913		ng/Sample		99	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			10.0	10.16		ng/Sample		102	67 - 127		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			10.0	10.50		ng/Sample		105	65 - 125		
4:2 FTS			9.34	10.04		ng/Sample		108	70 - 130		
6:2 FTS			9.48	9.599		ng/Sample		101	66 - 126		
8:2 FTS			9.58	10.33		ng/Sample		108	67 - 127		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			9.42	10.05		ng/Sample		107	70 - 130		
HFPO-DA (GenX)			10.0	10.37		ng/Sample		104	70 - 130		
F-53B Major			9.32	9.671		ng/Sample		104	70 - 130		
F-53B Minor			9.42	8.429		ng/Sample		89	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*99*		*25 - 150*
M2-8:2 FTS	*98*		*25 - 150*
M2-4:2 FTS	*90*		*25 - 150*
13C3 HFPO-DA	*118*		*25 - 150*

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.053		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*96*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFPeA	*91*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFHpA	*100*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFDA	*90*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFUnA	*87*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFDoA	*93*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
18O2 PFHxS	*89*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFOS	*78*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C8 FOSA	*78*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
d3-NMeFOSAA	*80*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	105		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-8:2 FTS	109		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-4:2 FTS	110		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C3 HFPO-DA	81		25 - 150	11/08/19 14:30	12/04/19 19:44	1

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.81		ng/Sample		102	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.58		ng/Sample		99	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.91		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.44		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	42.65		ng/Sample		107	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	40.36		ng/Sample		101	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.20		ng/Sample		96	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.20		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.76		ng/Sample		95	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.87		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.78		ng/Sample		93	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.76		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.56		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	41.49		ng/Sample		108	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.70		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	45.17		ng/Sample		113	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.68		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.56		ng/Sample		106	60 - 140
4:2 FTS	37.4	40.72		ng/Sample		109	60 - 140
6:2 FTS	37.9	39.51		ng/Sample		104	60 - 140
8:2 FTS	38.3	43.98		ng/Sample		115	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.90		ng/Sample		130	60 - 140
HFPO-DA (GenX)	40.0	43.61		ng/Sample		109	60 - 140
F-53B Major	37.3	42.74		ng/Sample		115	60 - 140
F-53B Minor	37.7	35.43		ng/Sample		94	60 - 140

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	102		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	103		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	93		25 - 150
13C2 PFDA	94		25 - 150
13C2 PFUnA	91		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	98		25 - 150
18O2 PFHxS	103		25 - 150
13C4 PFOS	86		25 - 150
13C8 FOSA	79		25 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	93		25 - 150
M2-6:2 FTS	114		25 - 150
M2-8:2 FTS	107		25 - 150
M2-4:2 FTS	125		25 - 150
13C3 HFPO-DA	85		25 - 150

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.44		ng/Sample		101	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.97		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.26		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.07		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.61		ng/Sample		99	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.35		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.26		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.48		ng/Sample		96	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	42.11		ng/Sample		105	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.72		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	34.65		ng/Sample		87	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.87		ng/Sample		99	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.06		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.18		ng/Sample		94	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.11		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.86		ng/Sample		99	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.54		ng/Sample		106	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.00		ng/Sample		99	60 - 140

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

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	46.50		ng/Sample		116	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.63		ng/Sample		104	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.70		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.94		ng/Sample		112	60 - 140
6:2 FTS	37.9	38.87		ng/Sample		102	60 - 140
8:2 FTS	38.3	44.56		ng/Sample		116	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	52.68		ng/Sample		140	60 - 140
HFPO-DA (GenX)	40.0	40.33		ng/Sample		101	60 - 140
F-53B Major	37.3	44.17		ng/Sample		118	60 - 140
F-53B Minor	37.7	34.93		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*101*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*102*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*92*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*75*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
M2-6:2 FTS	*104*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*94*		*25 - 150*

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.20		ng/Sample		103	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.01		ng/Sample		95	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.09		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.03		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.67		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.77		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	37.79		ng/Sample		94	60 - 140

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	39.35		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.33		ng/Sample		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	35.42		ng/Sample		100	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.86		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.61		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.56		ng/Sample		120	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.16		ng/Sample		97	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.96		ng/Sample		101	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.74		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	44.75		ng/Sample		112	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.84		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.82		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.65		ng/Sample		114	60 - 140
6:2 FTS	37.9	39.12		ng/Sample		103	60 - 140
8:2 FTS	38.3	40.04		ng/Sample		104	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.63		ng/Sample		126	60 - 140
HFPO-DA (GenX)	40.0	45.56		ng/Sample		114	60 - 140
F-53B Major	37.3	42.67		ng/Sample		114	60 - 140
F-53B Minor	37.7	36.73		ng/Sample		97	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*94*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
M2-6:2 FTS	*103*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	106		25 - 150
M2-4:2 FTS	108		25 - 150
13C3 HFPO-DA	83		25 - 150

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

LCMS

Prep Batch: 332701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7	E-1314,1315 R2 M0010 BH	Total/NA	Air	None	
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-17	E-1328,1329 R4 M0010 BH	Total/NA	Air	None	
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-27	A-6621,6622 R6 M0010 BH	Total/NA	Air	None	
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
MB 320-332701/1-D	Method Blank	Total/NA	Air	None	
LCS 320-332701/2-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-332701/3-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 332801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
MB 320-332801/1-C	Method Blank	Total/NA	Air	None	
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 333081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	Total/NA	Air	None	
140-17067-7 - RERA	E-1314,1315 R2 M0010 BH	Total/NA	Air	None	
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-10 - RERA	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	Total/NA	Air	None	
140-17067-17 - RERA	E-1328,1329 R4 M0010 BH	Total/NA	Air	None	
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-20 - RERA	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	Total/NA	Air	None	
140-17067-27 - RERA	A-6621,6622 R6 M0010 BH	Total/NA	Air	None	
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-30 - RERA	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	

Cleanup Batch: 333287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7	E-1314,1315 R2 M0010 BH	Total/NA	Air	Split	332701
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	332701
140-17067-17	E-1328,1329 R4 M0010 BH	Total/NA	Air	Split	332701
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	332701
140-17067-27	A-6621,6622 R6 M0010 BH	Total/NA	Air	Split	332701
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	332701
MB 320-332701/1-D	Method Blank	Total/NA	Air	Split	332701
LCS 320-332701/2-D	Lab Control Sample	Total/NA	Air	Split	332701
LCS 320-332701/3-D	Lab Control Sample	Total/NA	Air	Split	332701
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Split	332701

LCMS

Prep Batch: 333418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	Total/NA	Air	None	
140-17067-6	E-1312,1313 R2 M0010 FH	Total/NA	Air	None	
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	Total/NA	Air	None	
140-17067-16	E-1326,1327 R4 M0010 FH	Total/NA	Air	None	
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	Total/NA	Air	None	
140-17067-26	A-6619,6620 R6 M0010 FH	Total/NA	Air	None	
MB 320-333418/1-C	Method Blank	Total/NA	Air	None	
MB 320-333418/1-D	Method Blank	Total/NA	Air	None	
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 333704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	332801
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	332801
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	332801
MB 320-332801/1-C	Method Blank	Total/NA	Air	Preparation	332801
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	Preparation	332801
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	Preparation	332801
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	Preparation	332801

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-8 - RA	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-18 - RA	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-28 - RA	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-8 - RA	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-18 - RA	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-28 - RA	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

LCMS

Prep Batch: 336904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
MB 320-336904/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 337394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	Total/NA	Air	Split	333418
140-17067-6	E-1312,1313 R2 M0010 FH	Total/NA	Air	Split	333418
140-17067-16	E-1326,1327 R4 M0010 FH	Total/NA	Air	Split	333418
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	Total/NA	Air	Split	333418
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	Total/NA	Air	Split	333418
140-17067-26	A-6619,6620 R6 M0010 FH	Total/NA	Air	Split	333418
MB 320-333418/1-C	Method Blank	Total/NA	Air	Split	333418
MB 320-333418/1-D	Method Blank	Total/NA	Air	Split	333418
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Split	333418

Cleanup Batch: 337395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	Total/NA	Air	Split	333081
140-17067-7 - RERA	E-1314,1315 R2 M0010 BH	Total/NA	Air	Split	333081
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17067-10 - RERA	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	Total/NA	Air	Split	333081
140-17067-17 - RERA	E-1328,1329 R4 M0010 BH	Total/NA	Air	Split	333081
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17067-20 - RERA	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	Total/NA	Air	Split	333081
140-17067-27 - RERA	A-6621,6622 R6 M0010 BH	Total/NA	Air	Split	333081
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17067-30 - RERA	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081

Cleanup Batch: 337477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7	E-1314,1315 R2 M0010 BH	Total/NA	Air	Preparation	333287
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	333287
140-17067-17	E-1328,1329 R4 M0010 BH	Total/NA	Air	Preparation	333287
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	333287
140-17067-27	A-6621,6622 R6 M0010 BH	Total/NA	Air	Preparation	333287
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	333287
MB 320-332701/1-D	Method Blank	Total/NA	Air	Preparation	333287
LCS 320-332701/2-D	Lab Control Sample	Total/NA	Air	Preparation	333287
LCS 320-332701/3-D	Lab Control Sample	Total/NA	Air	Preparation	333287

LCMS (Continued)

Cleanup Batch: 337477 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Preparation	333287

Cleanup Batch: 338182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
MB 320-336904/1-C	Method Blank	Total/NA	Air	Split	336904
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Split	336904

Cleanup Batch: 338203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	Total/NA	Air	Preparation	337394
140-17067-6	E-1312,1313 R2 M0010 FH	Total/NA	Air	Preparation	337394
140-17067-16	E-1326,1327 R4 M0010 FH	Total/NA	Air	Preparation	337394
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	Total/NA	Air	Preparation	337394
140-17067-26	A-6619,6620 R6 M0010 FH	Total/NA	Air	Preparation	337394
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	Total/NA	Air	Preparation	337394
MB 320-333418/1-C	Method Blank	Total/NA	Air	Preparation	337394
MB 320-333418/1-D	Method Blank	Total/NA	Air	Preparation	337394
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Preparation	337394

Cleanup Batch: 338212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-7 - RERA	E-1314,1315 R2 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17067-10 - RERA	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-17 - RERA	E-1328,1329 R4 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17067-20 - RERA	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-27 - RERA	A-6621,6622 R6 M0010 BH	Total/NA	Air	Preparation	337395
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17067-30 - RERA	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395

Cleanup Batch: 338718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
MB 320-336904/1-C	Method Blank	Total/NA	Air	Preparation	338182
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Preparation	338182

LCMS (Continued)

Cleanup Batch: 338718 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Preparation	338182
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Preparation	338182

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6 - RE	E-1312,1313 R2 M0010 FH	Total/NA	Air	537 (modified)	338203
140-17067-16 - RE	E-1326,1327 R4 M0010 FH	Total/NA	Air	537 (modified)	338203
140-17067-26 - RE	A-6619,6620 R6 M0010 FH	Total/NA	Air	537 (modified)	338203
MB 320-333418/1-C	Method Blank	Total/NA	Air	537 (modified)	338203
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7 - RE	E-1314,1315 R2 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-10 - RE	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17067-17 - RE	E-1328,1329 R4 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-20 - RE	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17067-27 - RE	A-6621,6622 R6 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-30 - RE	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212

Cleanup Batch: 341397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7	E-1314,1315 R2 M0010 BH	Total/NA	Air	Dilution	337477
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Dilution	337477
140-17067-17	E-1328,1329 R4 M0010 BH	Total/NA	Air	Dilution	337477
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Dilution	337477
140-17067-27	A-6621,6622 R6 M0010 BH	Total/NA	Air	Dilution	337477
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Dilution	337477
MB 320-332701/1-D	Method Blank	Total/NA	Air	Dilution	337477
LCS 320-332701/2-D	Lab Control Sample	Total/NA	Air	Dilution	337477
LCS 320-332701/3-D	Lab Control Sample	Total/NA	Air	Dilution	337477
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Dilution	337477

Cleanup Batch: 341427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6	E-1312,1313 R2 M0010 FH	Total/NA	Air	Dilution	338203

LCMS (Continued)

Cleanup Batch: 341427 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-16	E-1326,1327 R4 M0010 FH	Total/NA	Air	Dilution	338203
140-17067-26	A-6619,6620 R6 M0010 FH	Total/NA	Air	Dilution	338203
MB 320-333418/1-D	Method Blank	Total/NA	Air	Dilution	338203
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Dilution	338203
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Dilution	338203
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Dilution	338203

Cleanup Batch: 341442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	Dilution	333704
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	Dilution	333704
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	Dilution	333704
MB 320-332801/1-C	Method Blank	Total/NA	Air	Dilution	333704
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	Dilution	333704
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	Dilution	333704
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	Dilution	333704

Analysis Batch: 342895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-6	E-1312,1313 R2 M0010 FH	Total/NA	Air	537 (modified)	341427
140-17067-16	E-1326,1327 R4 M0010 FH	Total/NA	Air	537 (modified)	341427
140-17067-26	A-6619,6620 R6 M0010 FH	Total/NA	Air	537 (modified)	341427
MB 320-333418/1-D	Method Blank	Total/NA	Air	537 (modified)	341427
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427

Analysis Batch: 343208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336904/1-C	Method Blank	Total/NA	Air	537 (modified)	338718
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718

Analysis Batch: 343817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718

Analysis Batch: 347676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7	E-1314,1315 R2 M0010 BH	Total/NA	Air	537 (modified)	341397
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	341397
140-17067-17	E-1328,1329 R4 M0010 BH	Total/NA	Air	537 (modified)	341397
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	341397
140-17067-27	A-6621,6622 R6 M0010 BH	Total/NA	Air	537 (modified)	341397
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	341397
MB 320-332701/1-D	Method Blank	Total/NA	Air	537 (modified)	341397
LCS 320-332701/2-D	Lab Control Sample	Total/NA	Air	537 (modified)	341397
LCS 320-332701/3-D	Lab Control Sample	Total/NA	Air	537 (modified)	341397

LCMS (Continued)

Analysis Batch: 347676 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	537 (modified)	341397

Analysis Batch: 347688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	341442
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	341442
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	341442
MB 320-332801/1-C	Method Blank	Total/NA	Air	537 (modified)	341442
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442

Analysis Batch: 349845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-7 - RERA	E-1314,1315 R2 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-10 - RERA	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17067-17 - RERA	E-1328,1329 R4 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-20 - RERA	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17067-27 - RERA	A-6621,6622 R6 M0010 BH	Total/NA	Air	537 (modified)	338212
140-17067-30 - RERA	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212

Analysis Batch: 349852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-8 - RA	E-1316 R2 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-18 - RA	E-1330 R4 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-28 - RA	A-6623 R6 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1312,1313 R2 M0010 FH

Lab Sample ID: 140-17067-6

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split	RE		12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			339368	11/17/19 15:45	S1M	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:47	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: E-1314,1315 R2 M0010 BH

Lab Sample ID: 140-17067-7

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 17:34	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:57	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 11:17	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-8

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.12554 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:33	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1316 R2 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-8

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.49846 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:27	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RA		0.12554 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:08	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-9

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 09:03	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-10

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 17:44	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 16:07	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 11:28	JRB	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1326,1327 R4 M0010 FH

Lab Sample ID: 140-17067-16
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split	RE		12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			339368	11/17/19 15:55	S1M	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:57	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: E-1328,1329 R4 M0010 BH

Lab Sample ID: 140-17067-17
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 17:53	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 16:18	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 11:38	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-18
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.12483 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:52	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: E-1330 R4 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-18

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.5 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:37	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RA		0.12483 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:28	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-19

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 09:43	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-20

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 18:03	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 16:28	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 11:48	JRB	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: A-6619,6620 R6 M0010 FH

Lab Sample ID: 140-17067-26

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split	RE		12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			339368	11/17/19 16:05	S1M	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 19:07	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6621,6622 R6 M0010 BH

Lab Sample ID: 140-17067-27

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 18:12	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 16:38	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 11:58	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-28

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.12456 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:11	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: A-6623 R6 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-28

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.49822 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:47	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RA		0.12456 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:48	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-29

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 10:32	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-30

Date Collected: 10/17/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 18:22	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 16:48	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 12:08	JRB	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Method Blank
Lab Sample ID: MB 320-332701/1-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-332801/1-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-333418/1-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:07	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-333418/1-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:07	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336668/1-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336904/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:44	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332701/2-D

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:27	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332701/3-D

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:37	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332701/4-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	200 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			50 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:16	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/2-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:17	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:26	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/3-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:27	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:36	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/4-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:37	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:04	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:14	P1N	TAL SAC
	Instrument ID: A9									

Laboratory References:

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Job ID: 140-17067-3

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-3
Project/Site: M0010 Field Samples (MeOH Re-Extraction)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17067-6	E-1312,1313 R2 M0010 FH	Air	10/14/19 00:00	10/19/19 09:30	
140-17067-7	E-1314,1315 R2 M0010 BH	Air	10/14/19 00:00	10/19/19 09:30	
140-17067-8	E-1316 R2 M0010 IMP 1,2&3 COND	Air	10/14/19 00:00	10/19/19 09:30	
140-17067-9	E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE	Air	10/14/19 00:00	10/19/19 09:30	
140-17067-10	E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/14/19 00:00	10/19/19 09:30	
140-17067-16	E-1326,1327 R4 M0010 FH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-17	E-1328,1329 R4 M0010 BH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-18	E-1330 R4 M0010 IMP 1,2&3 COND	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-19	E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-20	E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-26	A-6619,6620 R6 M0010 FH	Air	10/17/19 00:00	10/19/19 09:30	
140-17067-27	A-6621,6622 R6 M0010 BH	Air	10/17/19 00:00	10/19/19 09:30	
140-17067-28	A-6623 R6 M0010 IMP 1,2&3 COND	Air	10/17/19 00:00	10/19/19 09:30	
140-17067-29	A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE	Air	10/17/19 00:00	10/19/19 09:30	
140-17067-30	A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/17/19 00:00	10/19/19 09:30	

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Stack Testing for PFAS

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	

140-17067 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1305 R1 M0010 Filter (Combine with *E-1306*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1306 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-1305*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1307 R1 M0010 XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1308 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1307*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1309 R1 M0010 Impingers 1,2 & 3 Condensate CIA X2	1	10/13/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1310 R1 M0010 Impinger Glassware MeOH Rinse CIA Int Rinse X2	1	10/13/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1311 R1 M0010 Breakthrough XAD-2 Resin Tube BH	1	10/13/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1312 R2 M0010 Filter (Combine with *E-1313*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1313 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1312*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1314 R2 M0010 XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1315 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1314*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1316 R2 M0010 Impingers 1,2 & 3 Condensate X3	2	10/14/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1317 R2 M0010 Impinger Glassware MeOH Rinse X2	2	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1318 R2 M0010 Breakthrough XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1319 R3 M0010 Filter (Combine with *E-1320*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1320 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1319*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1321 R3 M0010 XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1322 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1321*	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1323 R3 M0010 Impingers 1,2 & 3 Condensate	3	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1324 R3 M0010 Impinger Glassware MeOH Rinse	3	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1325 R3 M0010 Breakthrough XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1326 R4 M0010 ~~Ambient Air~~ Filter (Combine with *E-1327*) Regular RUN Condition NOT Ambient Air	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1327 R4 M0010 ~~Ambient Air~~ Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1326*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1328 R4 M0010 ~~Ambient Air~~ XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1329 R4 M0010 ~~Ambient Air~~ BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1328*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1330 R4 M0010 ~~Ambient Air~~ Impingers 1,2 & 3 Condensate	4	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1331 R4 M0010 ~~Ambient Air~~ Impinger Glassware MeOH Rinse	4	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1332 R4 M0010 ~~Ambient Air~~ Breakthrough XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3 ,5.2 ,4.2 / CT 5.5, 5.3 ,5.2 ,4.2 c
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO (VISTONY SEALS, 5 COOLERS FED EX # 776259922962 m FAS

Custody Transfer:

		Name	Company	Date/Time
Relinquished By:	Doug Gehl		ETA	10/17/19 11:32
Accepted By:	W.M.		AST	10/17/19 11:32
Relinquished By:	W.M.		AST	10/18/19 11:35
Accepted By:	Bruce Damon		ESA KNX	10-19-19 09:30
Relinquished By:				
Accepted By:				
Relinquished By:				
Accepted By:				

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Scrubber By-Pass Testing for PFAS – Task .50

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

NOT SCRUBBER By pass - Regular Condition

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6605 R1 M0010 Filter (Combine with *A-6606*)	~~1~~	VOID Set-up as #5 RUN NOT completed		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6606 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *A-6605*)	1			125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6607 R1 M0010 XAD-2 Resin Tube	1			XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6608 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6607*)	1	Void		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6609 R1 M0010 Impingers 1,2 & 3 Condensate	1			1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6610 R1 M0010 Impinger Glassware MeOH Rinse	1			250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6611 R1 M0010 Breakthrough XAD-2 Resin Tube	1			XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 R2 M0010 Filter (Combine with *A-6613*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6613 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6612*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 R2 M0010 XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6614*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 R2 M0010 Impingers 1,2 & 3 Condensate X3	2 5 6 5	10/16/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6617 R2 M0010 Impinger Glassware MeOH Rinse	2 5 6 5	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6618 R2 M0010 Breakthrough XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6619 R3 M0010 Filter (Combine with *A-6620*)	5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6620 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6619*)	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6621 R3 M0010 XAD-2 Resin Tube	8 5 6	10/17/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6622 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6621*	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6623 R3 M0010 Impingers 1,2 & 3 Condensate	8 5 6	10/17/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6624 R3 M0010 Impinger Glassware MeOH Rinse	8 5 6	10/17/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

X2

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6625 R3 M0010 Breakthrough XAD-2 Resin Tube	~~5~~ 6	10/17/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2 / CT 5.5, 5.3, 5.2, 4.2 °C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX # 7765794229820m FDS

Custody Transfer:

		Name	Company	Date/Time
Relinquished By:	Doug Colvill		ETA	10/17/19 11:40
Accepted By:			AST	10/17/19 1:16
Relinquished By:			AST	10/18/ 11:3
Accepted By:			STAVX	10-19-19 09:30
Relinquished By:				
Accepted By:				
Relinquished By:				
Accepted By:				

Loc: 140
17067

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SI68 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 10-2-19

QA026R32.doc, 062719

1/30/2020

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-17067-3

Login Number: 17067
List Number: 3
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1046130/1046139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17068-1
Client Project/Site: M0010 QC Samples (MeOH)
Revision: 1

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 1:35:40 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified 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.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17068-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17068-1

Sample Receipt

The samples were received on October 19, 2019 at 9:30 AM. The temperatures of the 5 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C, 5.5º C and 17.4º C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB (140-17068-13), A-6617 QC M0010 DI WATER RB (140-17068-14) and A-6618 QC M0010 MEOH WITH 5% NH4OH RB (140-17068-15).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): The method blank for preparation batch 320-336962, 320-337396 and 320-338209 and analytical batch 320-340564 contained Perfluorooctanoic acid (PFOA) above the reporting limit (RL). There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

A-6601,6602 QC M0010 FH BT #1 (140-17068-1) and (MB 320-336962/1-C)

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343137 recovered outside control limits for the following analytes: DONA. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343812 contained Perfluorobutanoic acid (PFBA) above the method reporting limit. Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample. The data have been reported.

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

(ICV 320-343569/9)

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.

COND RL X2 (140-17068-26)

Job ID: 140-17068-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-4:2 FTS and M2-6:2 FTS are above the method recommended limit for the following samples: A-6603,6604 QC M0010 BH BT #1 (140-17068-2), A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1 (140-17068-5) and A-6615 QC M0010 XAD-2 RESIN TUBE TB (140-17068-11). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Surrogate recovery for 13C8 PFOA in the following continuing calibration verification was outside control limits: (CCV 320-349852/15). The surrogate recovery was biased high and all the associated samples were ND for this surrogate due to the possibility of not being spiked into the samples.

Method 537 (modified): Surrogate recoveries for the following samples was zero: A-6605 QC M0010 IMP 1,2&3 COND BT #1 (140-17068-3). It appears the samples were not spiked with surrogate compounds.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: A-6605 QC M0010 IMP 1,2&3 COND BT #1 (140-17068-3).

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

Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6601,6602 QC M0010 FH BT #1
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17068-1
Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanoic acid (PFOA)	**1.06**	**I H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C5 PFPeA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFHpA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C5 PFNA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFUnA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFDoA	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
18O2 PFHxS	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
d5-NEtFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*

Client Sample ID: A-6601,6602 QC M0010 FH BT #1

Lab Sample ID: 140-17068-1
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	91		25 - 150	11/08/19 14:30	11/21/19 21:40	1
M2-8:2 FTS	82		25 - 150	11/08/19 14:30	11/21/19 21:40	1
M2-4:2 FTS	92		25 - 150	11/08/19 14:30	11/21/19 21:40	1
13C3 HFPO-DA	74		25 - 150	11/08/19 14:30	11/21/19 21:40	1

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10.5**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoropentanoic acid (PFPeA)	**1.80**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorohexanoic acid (PFHxA)	**55.1**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroheptanoic acid (PFHpA)	**84.1**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanoic acid (PFOA)	**32.7**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorodecanoic acid (PFDA)	**28.5**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorobutanesulfonic acid (PFBS)	**7.47**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.87**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
HFPO-DA (GenX)	**5.19**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	56		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C5 PFPeA	68		25 - 150	11/10/19 11:40	12/20/19 18:47	1

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFHpA	81		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFOA	99		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C5 PFNA	93		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFDA	83		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFUnA	94		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFDoA	105		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFTeDA	107		25 - 150	11/10/19 11:40	12/20/19 18:47	1
18O2 PFHxS	86		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFOS	94		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C8 FOSA	89		25 - 150	11/10/19 11:40	12/20/19 18:47	1
d3-NMeFOSAA	100		25 - 150	11/10/19 11:40	12/20/19 18:47	1
d5-NEtFOSAA	108		25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-6:2 FTS	186	*	25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-8:2 FTS	105		25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-4:2 FTS	174	*	25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C3 HFPO-DA	79		25 - 150	11/10/19 11:40	12/20/19 18:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	122			11/10/19 11:40	12/20/19 18:47	1
13C8 PFOS	88			11/10/19 11:40	12/20/19 18:47	1

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.00**		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoropentanoic acid (PFPeA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorohexanoic acid (PFHxA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroheptanoic acid (PFHpA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanoic acid (PFOA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorononanoic acid (PFNA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorodecanoic acid (PFDA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroundecanoic acid (PFUnA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorododecanoic acid (PFDoA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorotridecanoic acid (PFTriA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorononanesulfonic acid (PFNS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanesulfonamide (FOSA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
4:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
6:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
8:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
HFPO-DA (GenX)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
F-53B Major	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
F-53B Minor	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C5 PFPeA	*93*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFHxA	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFHpA	*99*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C5 PFNA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFDA	*102*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFUnA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFDoA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
18O2 PFHxS	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFOS	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C8 FOSA	*99*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
d5-NEtFOSAA	*82*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-6:2 FTS	*86*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-8:2 FTS	*87*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-4:2 FTS	*80*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C3 HFPO-DA	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.05*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 16:38*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 16:38*	*1*

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C5 PFPeA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFHxA	*96*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFHpA	*96*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFOA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C5 PFNA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFDA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFDoA	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
18O2 PFHxS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFOS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
d5-NEtFOSAA	*110*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
M2-6:2 FTS	*104*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	97		25 - 150	11/10/19 11:40	12/05/19 20:56	1
13C3 HFPO-DA	100		25 - 150	11/10/19 11:40	12/05/19 20:56	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.005	X	50 - 150	11/10/19 11:40	01/23/20 11:48	1
13C8 PFOS	0	X	50 - 150	11/10/19 11:40	01/23/20 11:48	1

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.30**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoropentanoic acid (PFPeA)	**2.00**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorohexanoic acid (PFHxA)	**52.6**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroheptanoic acid (PFHpA)	**80.8**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanoic acid (PFOA)	**29.3**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorodecanoic acid (PFDA)	**26.2**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorobutanesulfonic acid (PFBS)	**6.91**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanesulfonic acid (PFOS)	**1.63**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
HFPO-DA (GenX)	**5.53**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*54*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C5 PFPeA	*67*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFHpA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFDA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFUnA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
18O2 PFHxS	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFOS	*92*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C8 FOSA	*82*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-6:2 FTS	*172*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-8:2 FTS	*96*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-4:2 FTS	*173*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C3 HFPO-DA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*117*			*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C8 PFOS	*86*			*11/10/19 11:40*	*12/20/19 18:57*	*1*

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-11

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.02**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoropentanoic acid (PFPeA)	**1.86**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorohexanoic acid (PFHxA)	**50.2**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroheptanoic acid (PFHpA)	**74.4**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanoic acid (PFOA)	**32.2**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorodecanoic acid (PFDA)	**24.5**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorobutanesulfonic acid (PFBS)	**5.74**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB
Lab Sample ID: 140-17068-11
Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanesulfonic acid (PFOS)	**1.88**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
HFPO-DA (GenX)	**4.07**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C5 PFPeA	*66*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFHxA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFHpA	*81*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFOA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C5 PFNA	*83*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFDA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFUnA	*80*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFDoA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFTeDA	*66*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
18O2 PFHxS	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C8 FOSA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-6:2 FTS	*153*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-8:2 FTS	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-4:2 FTS	*172*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C3 HFPO-DA	*78*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*			*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C8 PFOS	*82*			*11/10/19 11:40*	*12/20/19 19:07*	*1*

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.15**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFHxA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C5 PFNA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFUnA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFDoA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	103		25 - 150	11/10/19 11:40	12/05/19 21:36	1
M2-6:2 FTS	94		25 - 150	11/10/19 11:40	12/05/19 21:36	1
M2-8:2 FTS	92		25 - 150	11/10/19 11:40	12/05/19 21:36	1
M2-4:2 FTS	103		25 - 150	11/10/19 11:40	12/05/19 21:36	1
13C3 HFPO-DA	96		25 - 150	11/10/19 11:40	12/05/19 21:36	1

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.52**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	109		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C5 PFPeA	106		25 - 150	11/07/19 13:00	11/17/19 02:00	1

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	103		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C4 PFHpA	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C4 PFOA	108		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C5 PFNA	114		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFDA	112		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFUnA	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFTeDA	115		25 - 150	11/07/19 13:00	11/17/19 02:00	1
18O2 PFHxS	117		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C4 PFOS	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C8 FOSA	108		25 - 150	11/07/19 13:00	11/17/19 02:00	1
d3-NMeFOSAA	88		25 - 150	11/07/19 13:00	11/17/19 02:00	1
d5-NEtFOSAA	87		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-6:2 FTS	104		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-8:2 FTS	104		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-4:2 FTS	92		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C3 HFPO-DA	102		25 - 150	11/07/19 13:00	11/17/19 02:00	1

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.10**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
HFPO-DA (GenX)	**1.03**	**J H**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C5 PFPeA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFOA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C5 PFNA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFUnA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
18O2 PFHxS	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFOS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-8:2 FTS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C3 HFPO-DA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*

Client Sample ID: A-6905 MEDIA CHECK XAD

Lab Sample ID: 140-17068-19

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.56**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanoic acid (PFOA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6905 MEDIA CHECK XAD
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17068-19
Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
HFPO-DA (GenX)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C5 PFPeA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFHxA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFHpA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFOA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C5 PFNA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFUnA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFDoA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
18O2 PFHxS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFOS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-6:2 FTS	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-8:2 FTS	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-4:2 FTS	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFHpA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFOA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFDoA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFOS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C8 FOSA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	87		25 - 150	11/08/19 14:30	11/21/19 21:50	1
M2-8:2 FTS	77		25 - 150	11/08/19 14:30	11/21/19 21:50	1
M2-4:2 FTS	87		25 - 150	11/08/19 14:30	11/21/19 21:50	1
13C3 HFPO-DA	86		25 - 150	11/08/19 14:30	11/21/19 21:50	1

Client Sample ID: FH RL

Lab Sample ID: 140-17068-21
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.760**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoropentanoic acid (PFPeA)	**0.571**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorohexanoic acid (PFHxA)	**0.672**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroheptanoic acid (PFHpA)	**0.624**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanoic acid (PFOA)	**1.01**	**H B**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorononanoic acid (PFNA)	**0.574**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorodecanoic acid (PFDA)	**0.594**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroundecanoic acid (PFUnA)	**0.670**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorododecanoic acid (PFDoA)	**0.512**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorotridecanoic acid (PFTriA)	**0.554**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorotetradecanoic acid (PFTeA)	**0.639**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	**0.528**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.496**	**J H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanesulfonic acid (PFOS)	**0.506**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorononanesulfonic acid (PFNS)	**0.495**	**J H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanesulfonamide (FOSA)	**0.549**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**0.516**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**0.580**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
4:2 FTS	**0.507**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
6:2 FTS	**0.563**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
8:2 FTS	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	**0.503**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
HFPO-DA (GenX)	**1.68**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
F-53B Major	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1

Client Sample ID: FH RL

Lab Sample ID: 140-17068-21

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C2 PFHxA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C4 PFHpA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C4 PFOA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C5 PFNA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C2 PFUnA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C2 PFDoA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
18O2 PFHxS	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C4 PFOS	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
M2-4:2 FTS	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*
13C3 HFPO-DA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:00*	*1*

Client Sample ID: FH RL X2

Lab Sample ID: 140-17068-22

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.26**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoropentanoic acid (PFPeA)	**1.11**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorohexanoic acid (PFHxA)	**1.18**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoroheptanoic acid (PFHpA)	**1.07**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanoic acid (PFOA)	**1.45**	**H B**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorononanoic acid (PFNA)	**1.14**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorodecanoic acid (PFDA)	**1.15**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoroundecanoic acid (PFUnA)	**1.18**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorododecanoic acid (PFDoA)	**1.16**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorotridecanoic acid (PFTriA)	**1.14**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorotetradecanoic acid (PFTeA)	**1.13**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorobutanesulfonic acid (PFBS)	**0.913**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoropentanesulfonic acid (PFPeS)	**0.930**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.976**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1

Client Sample ID: FH RL X2

Lab Sample ID: 140-17068-22

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	1.05	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanesulfonic acid (PFOS)	1.03	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorononanesulfonic acid (PFNS)	1.01	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorodecanesulfonic acid (PFDS)	1.06	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanesulfonamide (FOSA)	1.18	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.26	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.34	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
4:2 FTS	1.00	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
6:2 FTS	1.05	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
8:2 FTS	1.10	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.09	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
HFPO-DA (GenX)	1.63	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
F-53B Major	1.08	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
F-53B Minor	0.973	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFHpA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFOA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFUnA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFDoA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
18O2 PFHxS	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFOS	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C8 FOSA	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-6:2 FTS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-4:2 FTS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*

Client Sample ID: BH RL

Lab Sample ID: 140-17068-23

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.14	H B	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1

Client Sample ID: BH RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-23
Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	**0.669**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorohexanoic acid (PFHxA)	**0.802**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroheptanoic acid (PFHpA)	**0.837**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorooctanoic acid (PFOA)	**0.642**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorononanoic acid (PFNA)	**0.589**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorodecanoic acid (PFDA)	**0.594**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroundecanoic acid (PFUnA)	**0.680**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorododecanoic acid (PFDoA)	**0.515**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorotridecanoic acid (PFTriA)	**0.508**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorotetradecanoic acid (PFTeA)	**0.568**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorobutanesulfonic acid (PFBS)	**0.579**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoropentanesulfonic acid (PFPeS)	**0.689**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorohexanesulfonic acid (PFHxS)	**0.586**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.534**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorooctanesulfonic acid (PFOS)	**0.596**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorononanesulfonic acid (PFNS)	**0.527**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorooctanesulfonamide (FOSA)	**0.586**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**0.530**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
4:2 FTS	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
6:2 FTS	**0.532**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
8:2 FTS	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	**0.572**	**H ***	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
HFPO-DA (GenX)	**1.18**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
F-53B Major	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
F-53B Minor	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C5 PFPeA	*79*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFHxA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C4 PFHpA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C4 PFOA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C5 PFNA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFDA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFUnA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFDoA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*

Client Sample ID: BH RL

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-23

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	79		25 - 150	11/10/19 11:40	12/05/19 22:56	1
13C4 PFOS	76		25 - 150	11/10/19 11:40	12/05/19 22:56	1
13C8 FOSA	73		25 - 150	11/10/19 11:40	12/05/19 22:56	1
d3-NMeFOSAA	85		25 - 150	11/10/19 11:40	12/05/19 22:56	1
d5-NEtFOSAA	96		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-6:2 FTS	95		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-8:2 FTS	96		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-4:2 FTS	91		25 - 150	11/10/19 11:40	12/05/19 22:56	1
13C3 HFPO-DA	71		25 - 150	11/10/19 11:40	12/05/19 22:56	1

Client Sample ID: BH RL X2

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-24

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.74	H B	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoropentanoic acid (PFPeA)	1.16	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorohexanoic acid (PFHxA)	1.27	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroheptanoic acid (PFHpA)	1.21	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanoic acid (PFOA)	1.08	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorononanoic acid (PFNA)	1.00	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorodecanoic acid (PFDA)	1.07	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroundecanoic acid (PFUnA)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorododecanoic acid (PFDoA)	0.974	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorotridecanoic acid (PFTriA)	0.908	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorotetradecanoic acid (PFTeA)	0.881	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorobutanesulfonic acid (PFBS)	1.00	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoropentanesulfonic acid (PFPeS)	1.09	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorohexanesulfonic acid (PFHxS)	1.08	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanesulfonic acid (PFOS)	0.927	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorononanesulfonic acid (PFNS)	0.913	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorodecanesulfonic acid (PFDS)	0.819	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanesulfonamide (FOSA)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.910	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.876	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1

Client Sample ID: BH RL X2

Lab Sample ID: 140-17068-24

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	0.821	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
6:2 FTS	0.948	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
8:2 FTS	0.947	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.20	H *	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
HFPO-DA (GenX)	1.43	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
F-53B Major	0.832	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
F-53B Minor	0.810	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C5 PFPeA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFHxA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFHpA	*78*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFOA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C5 PFNA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFDA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFUnA	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFDoA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
18O2 PFHxS	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFOS	*71*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C8 FOSA	*70*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-4:2 FTS	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C3 HFPO-DA	*71*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*

Client Sample ID: COND RL

Lab Sample ID: 140-17068-25

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.670		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoropentanoic acid (PFPeA)	0.538		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorohexanoic acid (PFHxA)	0.623		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroheptanoic acid (PFHpA)	0.549		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanoic acid (PFOA)	0.654		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorononanoic acid (PFNA)	0.546		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorodecanoic acid (PFDA)	0.566		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroundecanoic acid (PFUnA)	0.633		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorododecanoic acid (PFDoA)	0.554		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorotridecanoic acid (PFTriA)	0.520		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1

Client Sample ID: COND RL

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-25

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	**0.556**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.546**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanesulfonic acid (PFOS)	**0.492**	**J**	0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorononanesulfonic acid (PFNS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanesulfonamide (FOSA)	**0.619**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**0.548**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
4:2 FTS	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
6:2 FTS	**0.648**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
8:2 FTS	**0.589**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
HFPO-DA (GenX)	**1.02**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
F-53B Major	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
F-53B Minor	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFHpA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFOA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C5 PFNA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFDA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFUnA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFDoA	*101*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFOS	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C8 FOSA	*91*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-6:2 FTS	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C3 HFPO-DA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*

Client Sample ID: COND RL X2

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-26

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.03		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoropentanoic acid (PFPeA)	0.994		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorohexanoic acid (PFHxA)	1.00		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroheptanoic acid (PFHpA)	0.982		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanoic acid (PFOA)	1.25		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorononanoic acid (PFNA)	1.10		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorodecanoic acid (PFDA)	1.13	I	0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroundecanoic acid (PFUnA)	1.12		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorododecanoic acid (PFDoA)	0.967		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorotridecanoic acid (PFTriA)	0.968		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorotetradecanoic acid (PFTeA)	1.14		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorobutanesulfonic acid (PFBS)	0.615		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoropentanesulfonic acid (PFPeS)	0.833		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.901		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.936		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanesulfonic acid (PFOS)	0.948		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorononanesulfonic acid (PFNS)	0.930		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorodecanesulfonic acid (PFDS)	0.935		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanesulfonamide (FOSA)	1.05		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.939		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.942		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
4:2 FTS	0.904		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
6:2 FTS	1.24		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
8:2 FTS	1.13		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.930		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
HFPO-DA (GenX)	1.41		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
F-53B Major	0.842		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
F-53B Minor	0.961		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C4 PFHpA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C4 PFOA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C5 PFNA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFDA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: COND RL X2
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-26
Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C2 PFTeDA	108		25 - 150	11/07/19 13:00	11/17/19 02:29	1
18O2 PFHxS	112		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C4 PFOS	107		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C8 FOSA	98		25 - 150	11/07/19 13:00	11/17/19 02:29	1
d3-NMeFOSAA	87		25 - 150	11/07/19 13:00	11/17/19 02:29	1
d5-NEtFOSAA	84		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-6:2 FTS	91		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-8:2 FTS	98		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-4:2 FTS	84		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C3 HFPO-DA	108		25 - 150	11/07/19 13:00	11/17/19 02:29	1

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Surrogate Recovery (Acceptance Limits)	
		13C8PFOA	PFOS
Lab Sample ID	Client Sample ID		
140-17068-2	A-6603,6604 QC M0010 BH BT	122	88
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	117	86
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	115	82
MB 320-337397/1-C	Method Blank		

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Surrogate Recovery (Acceptance Limits)	
		13C8PFOA	PFOS
Lab Sample ID	Client Sample ID	(50-150)	(50-150)
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 C	0.05 X	0 X
140-17068-4 - RA	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	0.005 X	0 X

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17068-1	A-6601,6602 QC M0010 FH BT	89	86	92	95	92	92	92	91
140-17068-2	A-6603,6604 QC M0010 BH BT #1	56	68	93	81	99	93	83	94
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	94	93	97	99	94	100	102	100
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	95	93	96	96	98	94	93	89
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	54	67	91	84	94	87	84	90
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	57	66	90	81	90	83	75	80
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	93	89	93	91	94	90	90	86
140-17068-14	A-6617 QC M0010 DI WATER RB	109	106	103	111	108	114	112	111
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	91	92	92	92	90	85	86	87
140-17068-19	A-6905 MEDIA CHECK XAD	85	83	87	82	89	86	89	84
140-17068-20	A-6906 MEDIA CHECK FILTER	86	85	91	93	89	87	86	89
140-17068-21	FH RL	88	89	95	94	96	96	92	95
140-17068-22	FH RL X2	87	85	92	93	91	91	89	92
140-17068-23	BH RL	80	79	84	76	84	81	81	81
140-17068-24	BH RL X2	85	82	88	78	88	84	83	77
140-17068-25	COND RL	105	103	105	109	105	108	107	107
140-17068-26	COND RL X2	105	103	105	111	106	108	111	113
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-336962/2-C	Lab Control Sample	97	96	99	106	103	101	100	105
LCS 320-336962/3-C	Lab Control Sample	95	95	98	105	100	96	99	101
LCS 320-336962/4-C	Lab Control Sample	96	94	100	103	100	98	98	101
LCS 320-337397/2-C	Lab Control Sample	96	92	99	95	96	87	85	90
LCS 320-337397/2-C	Lab Control Sample	90	89	98	90	88	91	80	88
LCS 320-337397/3-C	Lab Control Sample	98	98	103	96	100	89	86	88
LCS 320-337397/3-C	Lab Control Sample	96	95	101	94	98	98	82	92
LCS 320-337397/4-C	Lab Control Sample	92	91	102	94	97	90	88	89
LCS 320-337397/4-C	Lab Control Sample	83	85	95	83	93	88	77	86
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-336962/1-C	Method Blank	98	94	104	105	102	98	97	101
MB 320-337397/1-C	Method Blank	94	89	94	92	92	91	92	91
MB 320-337397/1-C	Method Blank	98	97	100	91	97	91	80	89

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)	M262FTS (25-150)
140-17068-1	A-6601,6602 QC M0010 FH BT	90	82	103	89	80	82	93	91
140-17068-2	A-6603,6604 QC M0010 BH BT #1	105	107	86	94	89	100	108	186 *
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	98	94	105	96	99	85	82	86

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)	M262FTS (25-150)
140-17068-4	A-6606 QC M0010 IMP GLASSV	95	104	95	93	89	98	110	104
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	102	105	86	92	82	91	98	172 *
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	75	66	90	85	84	69	86	153 *
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	92	90	88	84	80	89	103	94
140-17068-14	A-6617 QC M0010 DI WATER RB	109	115	117	111	108	88	87	104
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	89	88	87	82	80	90	102	93
140-17068-19	A-6905 MEDIA CHECK XAD	91	88	82	82	80	87	99	87
140-17068-20	A-6906 MEDIA CHECK FILTER	94	87	101	83	85	82	92	87
140-17068-21	FH RL	101	89	102	92	80	86	97	93
140-17068-22	FH RL X2	95	85	98	90	83	84	98	89
140-17068-23	BH RL	85	76	79	76	73	85	96	95
140-17068-24	BH RL X2	82	76	77	71	70	77	87	92
140-17068-25	COND RL	101	96	116	106	91	92	86	100
140-17068-26	COND RL X2	109	108	112	107	98	87	84	91
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-336962/2-C	Lab Control Sample	108	102	112	94	93	92	102	96
LCS 320-336962/3-C	Lab Control Sample	104	97	109	92	92	88	103	93
LCS 320-336962/4-C	Lab Control Sample	103	100	105	96	95	93	101	89
LCS 320-337397/2-C	Lab Control Sample	100	91	99	85	81	83	95	113
LCS 320-337397/2-C	Lab Control Sample	93	93	83	86	81	90	97	130
LCS 320-337397/3-C	Lab Control Sample	99	88	94	84	81	86	98	110
LCS 320-337397/3-C	Lab Control Sample	94	99	89	87	85	99	111	133
LCS 320-337397/4-C	Lab Control Sample	95	93	85	75	81	86	98	108
LCS 320-337397/4-C	Lab Control Sample	92	96	76	76	77	91	102	122
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-336962/1-C	Method Blank	102	98	109	97	96	93	104	96
MB 320-337397/1-C	Method Blank	89	84	88	84	82	90	98	102
MB 320-337397/1-C	Method Blank	89	90	88	84	86	94	104	129

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)					
140-17068-1	A-6601,6602 QC M0010 FH BT	82	92	74					
140-17068-2	A-6603,6604 QC M0010 BH BT #1	105	174 *	79					
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	87	80	96					
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	93	97	100					
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	96	173 *	75					
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	84	172 *	78					

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
		M282FTS	M242FTS	HFPODA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)
140-17068-13	A-6616 QC M0010 COMBINED	92	103	96
140-17068-14	A-6617 QC M0010 DI WATER RB	104	92	102
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	88	90	83
140-17068-19	A-6905 MEDIA CHECK XAD	91	91	76
140-17068-20	A-6906 MEDIA CHECK FILTER	77	87	86
140-17068-21	FH RL	93	86	82
140-17068-22	FH RL X2	86	83	76
140-17068-23	BH RL	96	91	71
140-17068-24	BH RL X2	86	102	71
140-17068-25	COND RL	92	90	105
140-17068-26	COND RL X2	98	84	108
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112
LCS 320-336668/4-B	Lab Control Sample	98	90	118
LCS 320-336962/2-C	Lab Control Sample	90	98	86
LCS 320-336962/3-C	Lab Control Sample	84	99	91
LCS 320-336962/4-C	Lab Control Sample	80	95	85
LCS 320-337397/2-C	Lab Control Sample	109	119	91
LCS 320-337397/2-C	Lab Control Sample	88	121	96
LCS 320-337397/3-C	Lab Control Sample	99	109	90
LCS 320-337397/3-C	Lab Control Sample	86	127	104
LCS 320-337397/4-C	Lab Control Sample	104	105	87
LCS 320-337397/4-C	Lab Control Sample	84	139	92
MB 320-336668/1-B	Method Blank	84	93	113
MB 320-336962/1-C	Method Blank	83	96	91
MB 320-337397/1-C	Method Blank	95	95	97
MB 320-337397/1-C	Method Blank	83	128	107

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
18O2 PFHxS	*124*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOS	*108*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C8 FOSA	*105*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-8:2 FTS	84		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-4:2 FTS	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C3 HFPO-DA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	108		25 - 150
13C2 PFHxA	107		25 - 150
13C4 PFHpA	112		25 - 150
13C4 PFOA	109		25 - 150
13C5 PFNA	112		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	112		25 - 150
13C2 PFDoA	116		25 - 150
13C2 PFTeDA	119		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	111		25 - 150
13C8 FOSA	104		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	100		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	106		25 - 150

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.775		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.955		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.584		ng/Sample		92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.746		ng/Sample		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.117		ng/Sample		96	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.036		ng/Sample		97	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.134		ng/Sample		95	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.489		ng/Sample		98	68 - 128

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	10.0	9.940		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	9.906		ng/Sample		99	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.768		ng/Sample		98	65 - 125
4:2 FTS	9.34	9.915		ng/Sample		106	70 - 130
6:2 FTS	9.48	9.822		ng/Sample		104	66 - 126
8:2 FTS	9.58	9.688		ng/Sample		101	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.698		ng/Sample		103	70 - 130
HFPO-DA (GenX)	10.0	10.60		ng/Sample		106	70 - 130
F-53B Major	9.32	9.194		ng/Sample		99	70 - 130
F-53B Minor	9.42	9.238		ng/Sample		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	9.275		ng/Sample		93	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	8.145		ng/Sample		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.875		ng/Sample		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	8.135		ng/Sample		89	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.753		ng/Sample		102	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.139		ng/Sample		98	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.030		ng/Sample		94	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.069		ng/Sample		94	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.913		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.16		ng/Sample		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.50		ng/Sample		105	65 - 125
4:2 FTS	9.34	10.04		ng/Sample		108	70 - 130
6:2 FTS	9.48	9.599		ng/Sample		101	66 - 126
8:2 FTS	9.58	10.33		ng/Sample		108	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	10.05		ng/Sample		107	70 - 130
HFPO-DA (GenX)	10.0	10.37		ng/Sample		104	70 - 130
F-53B Major	9.32	9.671		ng/Sample		104	70 - 130
F-53B Minor	9.42	8.429		ng/Sample		89	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*99*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	98		25 - 150
M2-4:2 FTS	90		25 - 150
13C3 HFPO-DA	118		25 - 150

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanoic acid (PFOA)	1.299	I	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
6:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
8:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
HFPO-DA (GenX)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Major	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Minor	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C5 PFPeA	94		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFHxA	104		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFHpA	105		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFOA	102		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C5 PFNA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1

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

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	97		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFUnA	101		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFDoA	102		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFTeDA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1
18O2 PFHxS	109		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFOS	97		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C8 FOSA	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
d3-NMeFOSAA	93		25 - 150	11/08/19 14:30	11/21/19 20:32	1
d5-NEtFOSAA	104		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-6:2 FTS	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-8:2 FTS	83		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-4:2 FTS	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C3 HFPO-DA	91		25 - 150	11/08/19 14:30	11/21/19 20:32	1

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	47.47		ng/Sample		119	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.17		ng/Sample		103	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.57		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.60		ng/Sample		104	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	41.85		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.53		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.14		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.55		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.32		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.61		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.38		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	35.84		ng/Sample		96	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.73		ng/Sample		84	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.13		ng/Sample		108	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	40.15		ng/Sample		108	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.25		ng/Sample		105	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.58		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.01		ng/Sample		105	60 - 140

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.65		ng/Sample		104	60 - 140
4:2 FTS	37.4	38.47		ng/Sample		103	60 - 140
6:2 FTS	37.9	40.44		ng/Sample		107	60 - 140
8:2 FTS	38.3	39.07		ng/Sample		102	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.26		ng/Sample		120	60 - 140
HFPO-DA (GenX)	40.0	49.23		ng/Sample		123	60 - 140
F-53B Major	37.3	41.87		ng/Sample		112	60 - 140
F-53B Minor	37.7	37.66		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*106*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*
13C2 PFTeDA	*102*		*25 - 150*
18O2 PFHxS	*112*		*25 - 150*
13C4 PFOS	*94*		*25 - 150*
13C8 FOSA	*93*		*25 - 150*
d3-NMeFOSAA	*92*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*90*		*25 - 150*
M2-4:2 FTS	*98*		*25 - 150*
13C3 HFPO-DA	*86*		*25 - 150*

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.00		ng/Sample		115	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.98		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.87		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.82		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.67		ng/Sample		102	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.80		ng/Sample		110	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.94		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.11		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.91		ng/Sample		97	60 - 140

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

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorotetradecanoic acid (PFTeA)			40.0	40.19		ng/Sample		100	60 - 140		
Perfluorobutanesulfonic acid (PFBS)			35.4	33.19		ng/Sample		94	60 - 140		
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.75		ng/Sample		98	60 - 140		
Perfluorohexanesulfonic acid (PFHxS)			36.4	31.50		ng/Sample		87	60 - 140		
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.60		ng/Sample		107	60 - 140		
Perfluorooctanesulfonic acid (PFOS)			37.1	41.14		ng/Sample		111	60 - 140		
Perfluorononanesulfonic acid (PFNS)			38.4	41.02		ng/Sample		107	60 - 140		
Perfluorodecanesulfonic acid (PFDS)			38.6	41.37		ng/Sample		107	60 - 140		
Perfluorooctanesulfonamide (FOSA)			40.0	41.78		ng/Sample		104	60 - 140		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.83		ng/Sample		107	60 - 140		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.01		ng/Sample		105	60 - 140		
4:2 FTS			37.4	37.09		ng/Sample		99	60 - 140		
6:2 FTS			37.9	43.24		ng/Sample		114	60 - 140		
8:2 FTS			38.3	40.76		ng/Sample		106	60 - 140		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	43.97		ng/Sample		117	60 - 140		
HFPO-DA (GenX)			40.0	44.57		ng/Sample		111	60 - 140		
F-53B Major			37.3	43.37		ng/Sample		116	60 - 140		
F-53B Minor			37.7	37.89		ng/Sample		101	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*96*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*104*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*92*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*99*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.48		ng/Sample		116	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.46		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.21		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.25		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	42.08		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.34		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.66		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.00		ng/Sample		100	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	41.39		ng/Sample		103	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.22		ng/Sample		96	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.97		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.49		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.15		ng/Sample		103	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	38.87		ng/Sample		105	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.54		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.18		ng/Sample		104	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	40.92		ng/Sample		102	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.09		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.00		ng/Sample		103	60 - 140
4:2 FTS	37.4	36.89		ng/Sample		99	60 - 140
6:2 FTS	37.9	41.61		ng/Sample		110	60 - 140
8:2 FTS	38.3	40.96		ng/Sample		107	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.08		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	49.79		ng/Sample		124	60 - 140
F-53B Major	37.3	41.22		ng/Sample		111	60 - 140
F-53B Minor	37.7	37.49		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	101		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	100		25 - 150
18O2 PFHxS	105		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	95		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	101		25 - 150
M2-6:2 FTS	89		25 - 150
M2-8:2 FTS	80		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	85		25 - 150

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.173		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

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

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFHxA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFUnA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C8 FOSA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-6:2 FTS	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-4:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C3 HFPO-DA	*97*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.974		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanoic acid (PFOA)	1.084	I	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1

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

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C5 PFPeA	*97*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFHxA	*100*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFOA	*97*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFDA	*80*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C8 FOSA	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-6:2 FTS	*129*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-8:2 FTS	*83*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-4:2 FTS	*128*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C3 HFPO-DA	*107*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA				*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C8 PFOS				*11/10/19 11:40*	*12/20/19 18:08*	*1*

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.85	B	ng/Sample		112	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.94		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	39.66		ng/Sample		99	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.15		ng/Sample		100	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	36.96		ng/Sample		92	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.49		ng/Sample		106	60 - 140

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	43.69		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.05		ng/Sample		98	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.12		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.37		ng/Sample		97	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.67		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	47.12		ng/Sample		124	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.53		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.80		ng/Sample		98	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.62		ng/Sample		105	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.63		ng/Sample		107	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.05		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.83		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.36		ng/Sample		113	60 - 140
6:2 FTS	37.9	38.96		ng/Sample		103	60 - 140
8:2 FTS	38.3	44.75		ng/Sample		117	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.40		ng/Sample		118	60 - 140
HFPO-DA (GenX)	40.0	41.76		ng/Sample		104	60 - 140
F-53B Major	37.3	43.65		ng/Sample		117	60 - 140
F-53B Minor	37.7	31.23		ng/Sample		83	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*95*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*87*		*25 - 150*
13C2 PFDA	*85*		*25 - 150*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*85*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	95		25 - 150
M2-6:2 FTS	113		25 - 150
M2-8:2 FTS	109		25 - 150
M2-4:2 FTS	119		25 - 150
13C3 HFPO-DA	91		25 - 150

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.49		ng/Sample		104	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.06		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	39.96		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.63		ng/Sample		107	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.35		ng/Sample		101	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.39		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.18		ng/Sample		98	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.58		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.21		ng/Sample		96	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	37.16		ng/Sample		93	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.85		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	39.29		ng/Sample		111	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.44		ng/Sample		113	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.37		ng/Sample		105	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.77		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.89		ng/Sample		99	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.45		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	39.56		ng/Sample		103	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.40		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.38		ng/Sample		96	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.96		ng/Sample		92	60 - 140
4:2 FTS	37.4	32.39		ng/Sample		87	60 - 140
6:2 FTS	37.9	31.95		ng/Sample		84	60 - 140
8:2 FTS	38.3	37.55		ng/Sample		98	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.87		ng/Sample		111	60 - 140
HFPO-DA (GenX)	40.0	42.88		ng/Sample		107	60 - 140

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Major			37.3	38.60		ng/Sample		104	60 - 140		
F-53B Minor			37.7	35.31		ng/Sample		94	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*90*		*25 - 150*
13C5 PFPeA	*89*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*80*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
18O2 PFHxS	*83*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*90*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
M2-6:2 FTS	*130*		*25 - 150*
M2-8:2 FTS	*88*		*25 - 150*
M2-4:2 FTS	*121*		*25 - 150*
13C3 HFPO-DA	*96*		*25 - 150*

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)			40.0	42.68	B	ng/Sample		107	60 - 140		
Perfluoropentanoic acid (PFPeA)			40.0	38.23		ng/Sample		96	60 - 140		
Perfluorohexanoic acid (PFHxA)			40.0	38.79		ng/Sample		97	60 - 140		
Perfluoroheptanoic acid (PFHpA)			40.0	41.53		ng/Sample		104	60 - 140		
Perfluorooctanoic acid (PFOA)			40.0	38.04		ng/Sample		95	60 - 140		
Perfluorononanoic acid (PFNA)			40.0	44.18		ng/Sample		110	60 - 140		
Perfluorodecanoic acid (PFDA)			40.0	42.43		ng/Sample		106	60 - 140		
Perfluoroundecanoic acid (PFUnA)			40.0	39.24		ng/Sample		98	60 - 140		
Perfluorododecanoic acid (PFDoA)			40.0	39.90		ng/Sample		100	60 - 140		
Perfluorotridecanoic acid (PFTriA)			40.0	37.86		ng/Sample		95	60 - 140		
Perfluorotetradecanoic acid (PFTeA)			40.0	38.26		ng/Sample		96	60 - 140		
Perfluorobutanesulfonic acid (PFBS)			35.4	35.60		ng/Sample		101	60 - 140		
Perfluoropentanesulfonic acid (PFPeS)			37.5	37.85		ng/Sample		101	60 - 140		
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.57		ng/Sample		98	60 - 140		

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.61		ng/Sample		115	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.17		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	36.79		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.93		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.28		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.67		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.71		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.80		ng/Sample		112	60 - 140
6:2 FTS	37.9	37.37		ng/Sample		99	60 - 140
8:2 FTS	38.3	46.85		ng/Sample		122	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.98		ng/Sample		125	60 - 140
HFPO-DA (GenX)	40.0	42.47		ng/Sample		106	60 - 140
F-53B Major	37.3	40.84		ng/Sample		110	60 - 140
F-53B Minor	37.7	29.57		ng/Sample		78	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*98*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*110*		*25 - 150*
M2-8:2 FTS	*99*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*90*		*25 - 150*

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.05		ng/Sample		105	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.50		ng/Sample		104	60 - 140

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.75		ng/Sample		107	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.66		ng/Sample		107	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	37.59		ng/Sample		94	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.61		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.61		ng/Sample		99	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.69		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.91		ng/Sample		102	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	37.39		ng/Sample		93	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	35.58		ng/Sample		89	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	37.31		ng/Sample		106	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.99		ng/Sample		104	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.98		ng/Sample		96	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.98		ng/Sample		113	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.23		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	36.92		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.43		ng/Sample		97	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.70		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.71		ng/Sample		99	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	35.63		ng/Sample		89	60 - 140
4:2 FTS	37.4	33.51		ng/Sample		90	60 - 140
6:2 FTS	37.9	32.11		ng/Sample		85	60 - 140
8:2 FTS	38.3	38.35		ng/Sample		100	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.25		ng/Sample		115	60 - 140
HFPO-DA (GenX)	40.0	39.29		ng/Sample		98	60 - 140
F-53B Major	37.3	39.66		ng/Sample		106	60 - 140
F-53B Minor	37.7	35.18		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C4 PFOA	*98*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*82*		*25 - 150*
13C2 PFUnA	*92*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFTeDA	*99*		*25 - 150*
18O2 PFHxS	*89*		*25 - 150*
13C4 PFOS	*87*		*25 - 150*
13C8 FOSA	*85*		*25 - 150*
d3-NMeFOSAA	*99*		*25 - 150*
d5-NEtFOSAA	*111*		*25 - 150*
M2-6:2 FTS	*133*		*25 - 150*
M2-8:2 FTS	*86*		*25 - 150*
M2-4:2 FTS	*127*		*25 - 150*
13C3 HFPO-DA	*104*		*25 - 150*

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.94	B	ng/Sample		107	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.34		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.14		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.86		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.08		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	41.55		ng/Sample		104	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	43.72		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	36.95		ng/Sample		92	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.64		ng/Sample		99	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.27		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.36		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.69		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.55		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.12		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.30		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.51		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.89		ng/Sample		101	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.52		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.04		ng/Sample		103	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.03		ng/Sample		105	60 - 140
4:2 FTS	37.4	43.86		ng/Sample		117	60 - 140

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

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	39.22		ng/Sample		103	60 - 140
8:2 FTS	38.3	42.23		ng/Sample		110	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	53.06	*	ng/Sample		141	60 - 140
HFPO-DA (GenX)	40.0	40.53		ng/Sample		101	60 - 140
F-53B Major	37.3	41.43		ng/Sample		111	60 - 140
F-53B Minor	37.7	31.85		ng/Sample		85	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*91*		*25 - 150*
13C2 PFHxA	*102*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*90*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*89*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
18O2 PFHxS	*85*		*25 - 150*
13C4 PFOS	*75*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*104*		*25 - 150*
M2-4:2 FTS	*105*		*25 - 150*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.29		ng/Sample		108	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	42.16		ng/Sample		105	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.76		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.28		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	37.57		ng/Sample		94	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.59		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.64		ng/Sample		104	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	37.90		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.26		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	35.60		ng/Sample		89	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	39.20		ng/Sample		98	60 - 140

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

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	37.70		ng/Sample		107	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.88		ng/Sample		106	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.37		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.40		ng/Sample		111	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.39		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.20		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.01		ng/Sample		96	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.77		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.91		ng/Sample		100	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.64		ng/Sample		92	60 - 140
4:2 FTS	37.4	33.38		ng/Sample		89	60 - 140
6:2 FTS	37.9	33.04		ng/Sample		87	60 - 140
8:2 FTS	38.3	36.63		ng/Sample		96	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.00		ng/Sample		127	60 - 140
HFPO-DA (GenX)	40.0	41.76		ng/Sample		104	60 - 140
F-53B Major	37.3	40.99		ng/Sample		110	60 - 140
F-53B Minor	37.7	39.46		ng/Sample		105	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*83*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFHpA	*83*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*77*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*92*		*25 - 150*
13C2 PFTeDA	*96*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*122*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*139*		*25 - 150*
13C3 HFPO-DA	*92*		*25 - 150*

LCMS

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	None	
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	None	
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	None	
140-17068-25	COND RL	Total/NA	Air	None	
140-17068-26	COND RL X2	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	Preparation	336668
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	Preparation	336668
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	Preparation	336668
140-17068-25	COND RL	Total/NA	Air	Preparation	336668
140-17068-26	COND RL X2	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

Prep Batch: 336962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	None	
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	None	
140-17068-21	FH RL	Total/NA	Air	None	
140-17068-22	FH RL X2	Total/NA	Air	None	
MB 320-336962/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 337396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	Split	336962
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	Split	336962
140-17068-21	FH RL	Total/NA	Air	Split	336962
140-17068-22	FH RL X2	Total/NA	Air	Split	336962
MB 320-336962/1-C	Method Blank	Total/NA	Air	Split	336962
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Split	336962

Prep Batch: 337397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	None	
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	None	
140-17068-4 - RA	A-6606 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	None	
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	None	

LCMS (Continued)

Prep Batch: 337397 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	None	
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	None	
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	None	
140-17068-23	BH RL	Total/NA	Air	None	
140-17068-24	BH RL X2	Total/NA	Air	None	
MB 320-337397/1-C	Method Blank	Total/NA	Air	None	
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 338209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	Preparation	337396
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	Preparation	337396
140-17068-21	FH RL	Total/NA	Air	Preparation	337396
140-17068-22	FH RL X2	Total/NA	Air	Preparation	337396
MB 320-336962/1-C	Method Blank	Total/NA	Air	Preparation	337396
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Preparation	337396

Cleanup Batch: 338295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	Split	337397
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Split	337397
140-17068-4 - RA	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Split	337397
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	337397
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Split	337397
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	Split	337397
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Split	337397
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	Split	337397
140-17068-23	BH RL	Total/NA	Air	Split	337397
140-17068-24	BH RL X2	Total/NA	Air	Split	337397
MB 320-337397/1-C	Method Blank	Total/NA	Air	Split	337397
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Split	337397

Cleanup Batch: 338717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	Preparation	338295
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Preparation	338295
140-17068-4 - RA	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Preparation	338295
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338295
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Preparation	338295
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	Preparation	338295
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Preparation	338295
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	Preparation	338295
140-17068-23	BH RL	Total/NA	Air	Preparation	338295
140-17068-24	BH RL X2	Total/NA	Air	Preparation	338295
MB 320-337397/1-C	Method Blank	Total/NA	Air	Preparation	338295

LCMS (Continued)

Cleanup Batch: 338717 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Preparation	338295

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	537 (modified)	336880
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	537 (modified)	336880
140-17068-25	COND RL	Total/NA	Air	537 (modified)	336880
140-17068-26	COND RL X2	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	537 (modified)	338209
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	338209
140-17068-21	FH RL	Total/NA	Air	537 (modified)	338209
140-17068-22	FH RL X2	Total/NA	Air	537 (modified)	338209
MB 320-336962/1-C	Method Blank	Total/NA	Air	537 (modified)	338209
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209

Analysis Batch: 343137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717

Analysis Batch: 343812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	537 (modified)	338717
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	537 (modified)	338717
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	537 (modified)	338717
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	537 (modified)	338717
140-17068-23	BH RL	Total/NA	Air	537 (modified)	338717
140-17068-24	BH RL X2	Total/NA	Air	537 (modified)	338717
MB 320-337397/1-C	Method Blank	Total/NA	Air	537 (modified)	338717

Analysis Batch: 347676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	537 (modified)	338717
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338717
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	537 (modified)	338717
MB 320-337397/1-C	Method Blank	Total/NA	Air	537 (modified)	338717

LCMS (Continued)

Analysis Batch: 347676 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717

Analysis Batch: 349852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	537 (modified)	336880

Analysis Batch: 352542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-4 - RA	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	537 (modified)	338717

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6601,6602 QC M0010 FH BT #1

Lab Sample ID: 140-17068-1

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:40	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25143 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:40	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25143 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 16:38	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 20:56	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RA		1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split	RA		12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation	RA		2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			352542	01/23/20 11:48	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-11

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 19:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 21:36	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:00	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:16	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6905 MEDIA CHECK XAD

Lab Sample ID: 140-17068-19

Date Collected: 10/13/19 00:00

Matrix: Air

Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:46	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20

Date Collected: 10/13/19 00:00

Matrix: Air

Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:50	S1M	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: FH RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-21
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			25 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 22:00	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: FH RL X2
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-22
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			25 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 22:29	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: BH RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-23
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			180 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:56	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: BH RL X2
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-24
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			180 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 23:06	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: COND RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	500 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:19	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: COND RL X2
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Lab Sample ID: 140-17068-26
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	500 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:29	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 320-336668/1-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 320-336962/1-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:32	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 320-337397/1-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 20:26	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: Method Blank
Lab Sample ID: MB 320-337397/1-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:08	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:42	S1M	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:51	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:01	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:45	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:18	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:55	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:27	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 13:05	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:37	P1N	TAL SAC
	Instrument ID: A9_NC									

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-1
Project/Site: M0010 QC Samples (MeOH)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency
None = None
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	10/14/19 00:00	10/21/19 08:45	
140-17068-14	A-6617 QC M0010 DI WATER RB	Air	10/13/19 00:00	10/21/19 08:45	
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Air	10/13/19 00:00	10/21/19 08:45	
140-17068-19	A-6905 MEDIA CHECK XAD	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-20	A-6906 MEDIA CHECK FILTER	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-21	FH RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-22	FH RL X2	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-23	BH RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-24	BH RL X2	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-25	COND RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-26	COND RL X2	Air	10/21/19 00:00	10/21/19 13:00	

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility
Stack Testing for PFAS – Field QC Samples

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Packag	140-17068 Chain of Custody
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field BLANKS & Proof & Trip

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6601 QC M0010 Filter BT #1 (Combine with *A-6602*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6602 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #1 (Combine with *A-6601*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6603 QC M0010 XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6604 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #1 (Combine with *A-6603*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6605 QC M0010 Impingers 1,2 & 3 Condensate BT #1	QC	10/15/19	Blank Train #1	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6606 QC M0010 Impinger Glassware MeOH Rinse BT #1	QC	10/15/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6607 QC M0010 Breakthrough XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6608 QC M0010 Filter BT #2 (Combine with *A-6609*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6609 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #2 (Combine with *A-6608*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6610 QC M0010 XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6611 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #2 (Combine with *A-6610*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 QC M0010 Impingers 1,2 & 3 Condensate BT #2	QC	10/15/19	Blank Train #2	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6613 QC M0010 Impinger Glassware MeOH Rinse BT #2	QC	10/15/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

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Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 QC M0010 Breakthrough XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 QC M0010 XAD-2 Resin Tube TB $ D2356 Included	QC	10/13/19 10-15-19	Trip Blank	XAD-2 Resin Tube	**XAD-2 Resin Tube Trip Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/14/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6617 QC M0010 DI Water RB	QC	10/13/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6618 QC M0010 MeOH with 5% NH_4OH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	KT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4 C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FedEx # 7767 5942 3982 FOS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19 11:45
Accepted By:	W.M. Hoover	AST	10/17/19 11:45
Relinquished By:	W.M. Hoover	AST	10/18/19
Accepted By:	Amy Damon	ETA KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
D-2357 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/16/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2358 QC M0010 DI Water RB	QC	10/16/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2359 QC M0010 $MeCl_2$ RB	QC	NC	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methylene Chloride ($MeCl_2$) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2360 QC M0010 MeOH with 5% NH_4OH RB	QC	10/16/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4'C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX 7767 3942 2982 2m FOS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Dony Calill	ETA	10/17/19 12:00
Accepted By:		AST	10/17/19 12:30
Relinquished By:		AST	10/18/19 11:3
Accepted By:		ETA KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
17068

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:** _____

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓	✓		☑ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

4, A-6616, A-6617, A-6618

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: Ryan Norman Date: 10-21-19

QA026R32.doc, 062719

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-17068-1

Login Number: 17068
List Number: 3
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1046130/1046139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17068-3
Client Project/Site: M0010 QC Samples (MeOH Re-extraction)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 2:04:22 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
I	Value is EMPC (estimated maximum possible concentration).

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17068-3

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17068-3

Sample Receipt

The samples were received on October 19, 2020 at 9:30 AM. The temperatures of the 5 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C, 5.5º C and 17.4º C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB (140-17068-13), A-6617 QC M0010 DI WATER RB (140-17068-14) and A-6618 QC M0010 MEOH WITH 5% NH4OH RB (140-17068-15).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

GC/MS Semi VOA

Method 537 (modified): Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) was detected above the reporting limit (RL) in the method blank associated with preparation batch 320-332801, 320-333704 and 320-341442 and analytical batch 320-342900 as well as in the following samples: A-6612 QC M0010 IMP 1,2&3 COND BT #2 (140-17068-8), D-2358 QC M0010 DI WATER RB (140-17068-17) and (MB 320-332801/1-C). There was insufficient sample to perform a re-extraction again; therefore, the data have been reported.

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

LCMS

Method 537 (modified): The method blank for preparation batch 320-333081, 320-337395 and 320-338212 and analytical batch 320-340430 contained several analytes above the reporting limit (RL). Associated samples were not re-extracted due to limited sample volume.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333081, 320-337395 and 320-338212 and analytical batch 320-340430 recovered outside control limits for the following analytes: HFPO-DA (GenX). These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported. Associated samples were not re-extracted due to limited sample volume.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: A-6610,6611 QC M0010 BH BT #2 (140-17068-7) and A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2 (140-17068-10). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. The samples were not re-extracted due to limited sample volume.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for d5-NEtFOSAA: A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2 (140-17068-10). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample. The sample was not re-extracted due to limited sample volume.

Job ID: 140-17068-3 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332801, 320-333704 and 320-341442 and analytical batch 320-342900 recovered outside control limits for several analytes. Sample re-extraction and reanalysis was not possible due to insufficient sample; therefore, the data have been reported.

Method 537 (modified): Due to exceedingly low concentrations of Isotope Dilution Analytes (IDAs) in the original extract, the following samples required isotope dilution analyte solutions to be refortified into the extract at a 1X dilution so quantitation could be performed. A-6608,6609 QC M0010 FH BT #2 (140-17068-6), (LCS 320-333418/2-D), (LCS 320-333418/3-D), (LCS 320-333418/4-D) and (MB 320-333418/1-D). The client was contacted and gave permission to report data with possible low bias.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 and analytical batch 320-342895 recovered outside control limits for all the analytes. The LCS was reanalyzed with concurring results. The data have been reported with low bias results.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Due to insufficient sample re-extraction and/or re-analysis of samples were not performed. The method blank was re-analyzed with concurring results; therefore, the data have been reported.

Method 537 (modified): Due to exceedingly low concentrations of isotope dilution analytes in the original extract, the following sample required isotope dilution analyte solutions to be refortified into the extract after dilution so quantitation could be performed. Sample re-extraction and reanalysis was not possible due to insufficient sample. Client was contacted and gave permission to report with narration and possible low bias results.

A-6610,6611 QC M0010 BH BT #2 (140-17068-7), A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2 (140-17068-10), D-2356 QC M0010 XAD-2 RESIN TUBE TB (140-17068-12), (LCS 320-332701/2-D), (LCS 320-332701/3-D), (LCS 320-332701/4-D) and (MB 320-332701/1-D)

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA), HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 and analytical batch 320-342657 recovered outside control limits for several analytes. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported with possible low bias.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343137 recovered outside control limits for the following analytes: DONA. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343812 contained Perfluorobutanoic acid (PFBA) above the method reporting limit. Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample. The data have been reported.

Method 537 (modified): Due to exceedingly low concentrations of isotope dilution analytes in the original extract, the following samples required isotope dilution analyte solutions to be refortified into the extract after dilution so quantitation could be performed. Sample re-extraction and reanalysis was not possible due to insufficient sample. Client was contacted and gave permission to report with narration and possible low bias results.

A-6612 QC M0010 IMP 1,2&3 COND BT #2 (140-17068-8), D-2358 QC M0010 DI WATER RB (140-17068-17), (LCS 320-332801/2-C), (LCS 320-332801/3-C), (LCS 320-332801/4-C) and (MB 320-332801/1-C)

Method 537 (modified): Internal standard (ISTD) response for the following samples were outside control limits: A-6610,6611 QC M0010

Job ID: 140-17068-3 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

BH BT #2 (140-17068-7) and D-2356 QC M0010 XAD-2 RESIN TUBE TB (140-17068-12). The internal standard is not used to quantitate target analytes; therefore, there is no impact to the data.

Method 537 (modified): The following samples required a complex dilution due to the nature of the sample matrix: A-6610,6611 QC M0010 BH BT #2 (140-17068-7), A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2 (140-17068-10) and D-2356 QC M0010 XAD-2 RESIN TUBE TB (140-17068-12). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 537 (modified): The following samples required a dilution due to the nature of the sample matrix: A-6612 QC M0010 IMP 1,2&3 COND BT #2 (140-17068-8) and D-2358 QC M0010 DI WATER RB (140-17068-17). Because of this dilution, the surrogate spike concentration of 13C8 PFOA and 13C8 PFOS in the samples were reduced to a level where the recovery calculation does not provide useful information.

Method 537 (modified): Surrogate recovery for 13C8 PFOA and 13C8 PFOA for the following samples were below control limits: A-6612 QC M0010 IMP 1,2&3 COND BT #2 (140-17068-8) and D-2358 QC M0010 DI WATER RB (140-17068-17). Insufficient extraction of the air matrix is suspected. Samples were refortified with IDA standards without the addition of surrogate standards. Sample re-extraction was not preformed due to insufficient samples volume.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: A-6610,6611 QC M0010 BH BT #2 (140-17068-7), A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2 (140-17068-10) and D-2356 QC M0010 XAD-2 RESIN TUBE TB (140-17068-12).

Method 537 (modified): The method blank (MB) for preparation batch 320-333418, 320-337394 and 320-338203 and analytical batch 320-339368 contained several analytes above the reporting limit (RL). The MB was re-analyzed with concurring results. Associated sample was not re-extracted due to limited sample volume. (MB 320-333418/1-C)

Method 537 (modified): The laboratory control samples (LCS) for preparation batch 320-333418, 320-337394 and 320-338203 and analytical batch 320-339368 recovered outside control limits for many of the analytes. The LCSs were re-analyzed with concurring results. Associated samples were not re-extracted due to limited sample volume. (LCS 320-333418/2-C), (LCS 320-333418/3-C) and (LCS 320-333418/4-C)

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for several IDA: A-6608,6609 QC M0010 FH BT #2 (140-17068-6), (LCS 320-333418/2-C), (LCS 320-333418/3-C), (LCS 320-333418/4-C) and (MB 320-333418/1-C). The samples were re-analyzed with concurring results. The samples were not re-extracted due to limits sample volume. The samples were also re-fortified with IDA and re-analyzed. Both sets of data are reported.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte. (LCS 320-333418/2-C), (LCS 320-333418/3-C) and (LCS 320-333418/4-C)

Method 537 (modified): Internal standard (ISTD) response for 13C2 PFOA for the following samples was outside acceptance criteria: D-2356 QC M0010 XAD-2 RESIN TUBE TB (140-17068-12). The associated surrogate recoveries were within control limits; therefore, the data have been reported.

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

Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client Sample ID: A-6608,6609 QC M0010 FH BT #2

Lab Sample ID: 140-17068-6

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.77**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
Perfluorooctanesulfonamide (FOSA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
HFPO-DA (GenX)	**3.75**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1
F-53B Minor	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 19:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*63*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C5 PFPeA	*61*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C2 PFHxA	*62*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C4 PFHpA	*64*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C4 PFOA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C5 PFNA	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C2 PFDA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C2 PFUnA	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C2 PFDoA	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C2 PFTeDA	*61*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
18O2 PFHxS	*64*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C4 PFOS	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
13C8 FOSA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
d3-NMeFOSAA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*
d5-NEtFOSAA	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 19:17*	*1*

Client Sample ID: A-6608,6609 QC M0010 FH BT #2

Lab Sample ID: 140-17068-6

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	78		25 - 150	10/24/19 15:00	12/03/19 19:17	1
M2-8:2 FTS	64		25 - 150	10/24/19 15:00	12/03/19 19:17	1
M2-4:2 FTS	53		25 - 150	10/24/19 15:00	12/03/19 19:17	1
13C3 HFPO-DA	63		25 - 150	10/24/19 15:00	12/03/19 19:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.47**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluoropentanoic acid (PFPeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorohexanoic acid (PFHxA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluoroheptanoic acid (PFHpA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorooctanoic acid (PFOA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorononanoic acid (PFNA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorodecanoic acid (PFDA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluoroundecanoic acid (PFUnA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorododecanoic acid (PFDoA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorotridecanoic acid (PFTriA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorotetradecanoic acid (PFTeA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorobutanesulfonic acid (PFBS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluoropentanesulfonic acid (PFPeS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorooctanesulfonic acid (PFOS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorononanesulfonic acid (PFNS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorodecanesulfonic acid (PFDS)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
Perfluorooctanesulfonamide (FOSA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
4:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
6:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
8:2 FTS	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
HFPO-DA (GenX)	**35.1**	**B ***	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
F-53B Major	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1
F-53B Minor	ND	*	1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 16:14	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	10	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C5 PFPeA	10	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C2 PFHxA	10	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C4 PFHpA	9	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C4 PFOA	10	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C5 PFNA	9	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C2 PFDA	9	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C2 PFUnA	9	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C2 PFDoA	10	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1

Client Sample ID: A-6608,6609 QC M0010 FH BT #2

Lab Sample ID: 140-17068-6
Matrix: Air

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	9	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
18O2 PFHxS	2	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C4 PFOS	2	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C8 FOSA	0.04	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
d3-NMeFOSAA	21	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
d5-NEtFOSAA	14	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
M2-6:2 FTS	8	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
M2-8:2 FTS	8	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
M2-4:2 FTS	8	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1
13C3 HFPO-DA	3	*	25 - 150	10/24/19 15:00	11/17/19 16:14	1

Client Sample ID: A-6610,6611 QC M0010 BH BT #2

Lab Sample ID: 140-17068-7
Matrix: Air

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.80**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorohexanoic acid (PFHxA)	**4.51**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluoroheptanoic acid (PFHpA)	**6.27**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorooctanoic acid (PFOA)	**4.59**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorodecanoic acid (PFDA)	**2.73**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
HFPO-DA (GenX)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1

Client Sample ID: A-6610,6611 QC M0010 BH BT #2

Lab Sample ID: 140-17068-7

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C5 PFPeA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C2 PFHxA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C4 PFHpA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C4 PFOA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C5 PFNA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C2 PFDA	*40*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C2 PFUnA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C2 PFDoA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C2 PFTeDA	*63*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
18O2 PFHxS	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C4 PFOS	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C8 FOSA	*84*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
d3-NMeFOSAA	*66*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
M2-6:2 FTS	*137*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
M2-8:2 FTS	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
M2-4:2 FTS	*76*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*
13C3 HFPO-DA	*59*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:27*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10.4**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluoropentanoic acid (PFPeA)	**1.90**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorohexanoic acid (PFHxA)	**51.4**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluoroheptanoic acid (PFHpA)	**77.4**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorooctanoic acid (PFOA)	**25.7**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorodecanoic acid (PFDA)	**27.4**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorobutanesulfonic acid (PFBS)	**5.52**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorohexanesulfonic acid (PFHxS)	**1.15**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorooctanesulfonic acid (PFOS)	**2.24**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
Perfluorooctanesulfonamide (FOSA)	**11.7**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1

Client Sample ID: A-6610,6611 QC M0010 BH BT #2

Lab Sample ID: 140-17068-7
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**1.77**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**1.41**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
6:2 FTS	**1.68**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
HFPO-DA (GenX)	**18.2**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 18:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*53*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C5 PFPeA	*69*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C2 PFHxA	*81*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C4 PFHpA	*82*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C4 PFOA	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C5 PFNA	*86*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C2 PFDA	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C2 PFUnA	*99*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C2 PFDoA	*105*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C2 PFTeDA	*102*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
18O2 PFHxS	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
d3-NMeFOSAA	*51*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
d5-NEtFOSAA	*46*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
M2-6:2 FTS	*142*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
M2-8:2 FTS	*133*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
M2-4:2 FTS	*125*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*
13C3 HFPO-DA	*60*		*25 - 150*	*10/23/19 16:00*	*11/21/19 18:51*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*99*		*50 - 150*	*10/23/19 16:00*	*01/09/20 12:58*	*1*
13C8 PFOS	*76*		*50 - 150*	*10/23/19 16:00*	*01/09/20 12:58*	*1*

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2

Lab Sample ID: 140-17068-8
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.15**		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorobutanoic acid (PFBA)	**8.27**	**H B ***	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluoropentanoic acid (PFPeA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluoropentanoic acid (PFPeA)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2
Lab Sample ID: 140-17068-8
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorohexanoic acid (PFHxA)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluoroheptanoic acid (PFHpA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorooctanoic acid (PFOA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorooctanoic acid (PFOA)	**5.42**	**I H B**	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorononanoic acid (PFNA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorononanoic acid (PFNA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorodecanoic acid (PFDA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorodecanoic acid (PFDA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluoroundecanoic acid (PFUnA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorododecanoic acid (PFDoA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorotridecanoic acid (PFTriA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorotridecanoic acid (PFTriA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorononanesulfonic acid (PFNS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorononanesulfonic acid (PFNS)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
Perfluorooctanesulfonamide (FOSA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
Perfluorooctanesulfonamide (FOSA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
4:2 FTS	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
4:2 FTS	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
6:2 FTS	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
6:2 FTS	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2

Lab Sample ID: 140-17068-8

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
8:2 FTS	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
8:2 FTS	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
HFPO-DA (GenX)	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
HFPO-DA (GenX)	**16.0**	**H B ***	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
F-53B Major	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
F-53B Major	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1
F-53B Minor	ND		2.03	1.99	ng/Sample		11/07/19 13:00	11/17/19 01:50	1
F-53B Minor	ND	H	2.03	1.99	ng/Sample		10/22/19 17:20	12/20/19 22:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C4 PFBA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C5 PFPeA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C5 PFPeA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C2 PFHxA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C2 PFHxA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C4 PFHpA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C4 PFHpA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C4 PFOA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C4 PFOA	*59*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C5 PFNA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C5 PFNA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C2 PFDA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C2 PFDA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C2 PFUnA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C2 PFUnA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C2 PFDoA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C2 PFDoA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C2 PFTeDA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C2 PFTeDA	*65*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
18O2 PFHxS	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
18O2 PFHxS	*61*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C4 PFOS	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C4 PFOS	*79*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
13C8 FOSA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
13C8 FOSA	*84*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
M2-8:2 FTS	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
M2-8:2 FTS	*58*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*
M2-4:2 FTS	*87*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:50*	*1*
M2-4:2 FTS	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 22:57*	*1*

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2

Lab Sample ID: 140-17068-8

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	105		25 - 150	11/07/19 13:00	11/17/19 01:50	1
13C3 HFPO-DA	54		25 - 150	10/22/19 17:20	12/20/19 22:57	1

Client Sample ID: A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2

Lab Sample ID: 140-17068-9

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.11**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150	11/10/19 11:40	12/05/19 21:16	1
13C5 PFPeA	87		25 - 150	11/10/19 11:40	12/05/19 21:16	1
13C2 PFHxA	90		25 - 150	11/10/19 11:40	12/05/19 21:16	1
13C4 PFHpA	87		25 - 150	11/10/19 11:40	12/05/19 21:16	1
13C4 PFOA	88		25 - 150	11/10/19 11:40	12/05/19 21:16	1

Client Sample ID: A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2

Lab Sample ID: 140-17068-9

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C2 PFUnA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
18O2 PFHxS	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C4 PFOS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C8 FOSA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
M2-6:2 FTS	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*
13C3 HFPO-DA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:16*	*1*

Client Sample ID: A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2

Lab Sample ID: 140-17068-10

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.66**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorohexanoic acid (PFHxA)	**3.04**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluoroheptanoic acid (PFHpA)	**4.37**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorooctanoic acid (PFOA)	**4.69**	**H I B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorodecanoic acid (PFDA)	**2.37**	**H ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1

Client Sample ID: A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2
Lab Sample ID: 140-17068-10
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
HFPO-DA (GenX)	**39.0**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C5 PFPeA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C2 PFHxA	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C4 PFHpA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C4 PFOA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C5 PFNA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C2 PFDA	*41*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C2 PFDoA	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C2 PFTeDA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
18O2 PFHxS	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C4 PFOS	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C8 FOSA	*78*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
d3-NMeFOSAA	*64*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
d5-NEtFOSAA	*77*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
M2-6:2 FTS	*135*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
M2-8:2 FTS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
M2-4:2 FTS	*66*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*
13C3 HFPO-DA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:37*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10.4**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluoropentanoic acid (PFPeA)	**1.64**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorohexanoic acid (PFHxA)	**42.1**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluoroheptanoic acid (PFHpA)	**63.3**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorooctanoic acid (PFOA)	**21.3**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorodecanoic acid (PFDA)	**22.0**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorobutanesulfonic acid (PFBS)	**4.77**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2
Lab Sample ID: 140-17068-10
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorooctanesulfonic acid (PFOS)	**2.03**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
Perfluorooctanesulfonamide (FOSA)	**19.1**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
6:2 FTS	**1.43**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
HFPO-DA (GenX)	**123**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C5 PFPeA	*70*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C2 PFHxA	*80*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C4 PFHpA	*82*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C4 PFOA	*90*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C5 PFNA	*88*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C2 PFDA	*92*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C2 PFUnA	*93*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C2 PFDoA	*103*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
18O2 PFHxS	*86*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C4 PFOS	*82*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C8 FOSA	*0.6*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
d3-NMeFOSAA	*26*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
d5-NEtFOSAA	*18*	*	*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
M2-6:2 FTS	*128*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
M2-4:2 FTS	*111*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*
13C3 HFPO-DA	*62*		*25 - 150*	*10/23/19 16:00*	*11/21/19 19:01*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*96*		*50 - 150*	*10/23/19 16:00*	*01/09/20 13:08*	*1*
13C8 PFOS	*76*		*50 - 150*	*10/23/19 16:00*	*01/09/20 13:08*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2356 QC M0010 XAD-2 RESIN TUBE TB
Lab Sample ID: 140-17068-12
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.84**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluoropentanoic acid (PFPeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorohexanoic acid (PFHxA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorooctanoic acid (PFOA)	**1.09**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorononanoic acid (PFNA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorodecanoic acid (PFDA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluoroundecanoic acid (PFUnA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorododecanoic acid (PFDoA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorotridecanoic acid (PFTriA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorotetradecanoic acid (PFTeA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorooctanesulfonic acid (PFOS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorononanesulfonic acid (PFNS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorodecanesulfonic acid (PFDS)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
Perfluorooctanesulfonamide (FOSA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
4:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
6:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
8:2 FTS	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
HFPO-DA (GenX)	**29.4**	**H B ***	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
F-53B Major	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1
F-53B Minor	ND	H *	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 17:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C5 PFPeA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C2 PFHxA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C4 PFHpA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C4 PFOA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C5 PFNA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C2 PFDA	*38*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C2 PFUnA	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C2 PFDoA	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C2 PFTeDA	*57*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
18O2 PFHxS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C4 PFOS	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
13C8 FOSA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
d3-NMeFOSAA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*
d5-NEtFOSAA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 17:48*	*1*

Client Sample ID: D-2356 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-12

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	120		25 - 150	10/22/19 17:20	12/20/19 17:48	1
M2-8:2 FTS	45		25 - 150	10/22/19 17:20	12/20/19 17:48	1
M2-4:2 FTS	63		25 - 150	10/22/19 17:20	12/20/19 17:48	1
13C3 HFPO-DA	54		25 - 150	10/22/19 17:20	12/20/19 17:48	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.33**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorohexanoic acid (PFHxA)	**2.19**	**B**	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluoroheptanoic acid (PFHpA)	**2.24**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorooctanoic acid (PFOA)	**1.36**		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
HFPO-DA (GenX)	**119**	**B ***	1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/23/19 16:00	11/21/19 19:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	72		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C5 PFPeA	76		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C2 PFHxA	83		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C4 PFHpA	79		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C4 PFOA	86		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C5 PFNA	84		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C2 PFDA	87		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C2 PFUnA	95		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C2 PFDoA	98		25 - 150	10/23/19 16:00	11/21/19 19:10	1

Client Sample ID: D-2356 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-12

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	97		25 - 150	10/23/19 16:00	11/21/19 19:10	1
18O2 PFHxS	69		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C4 PFOS	66		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C8 FOSA	68		25 - 150	10/23/19 16:00	11/21/19 19:10	1
d3-NMeFOSAA	84		25 - 150	10/23/19 16:00	11/21/19 19:10	1
d5-NEtFOSAA	88		25 - 150	10/23/19 16:00	11/21/19 19:10	1
M2-6:2 FTS	123		25 - 150	10/23/19 16:00	11/21/19 19:10	1
M2-8:2 FTS	106		25 - 150	10/23/19 16:00	11/21/19 19:10	1
M2-4:2 FTS	99		25 - 150	10/23/19 16:00	11/21/19 19:10	1
13C3 HFPO-DA	73		25 - 150	10/23/19 16:00	11/21/19 19:10	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	105		50 - 150	10/23/19 16:00	01/09/20 13:18	1
13C8 PFOS	66		50 - 150	10/23/19 16:00	01/09/20 13:18	1

Client Sample ID: D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-16

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.71**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1

Client Sample ID: D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-16
Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C5 PFPeA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C2 PFHxA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C4 PFHpA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C4 PFOA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C5 PFNA	*78*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C2 PFDA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C2 PFUnA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C2 PFDoA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
18O2 PFHxS	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C4 PFOS	*75*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C8 FOSA	*75*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
d5-NEtFOSAA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
M2-6:2 FTS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
M2-8:2 FTS	*78*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
M2-4:2 FTS	*79*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:26*	*1*

Client Sample ID: D-2358 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-17
Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorobutanoic acid (PFBA)	**5.59**	**H B ***	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluoropentanoic acid (PFPeA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluoropentanoic acid (PFPeA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorohexanoic acid (PFHxA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorohexanoic acid (PFHxA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluoroheptanoic acid (PFHpA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluoroheptanoic acid (PFHpA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorooctanoic acid (PFOA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorooctanoic acid (PFOA)	**3.98**	**H I B**	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorononanoic acid (PFNA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorononanoic acid (PFNA)	ND	H I	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2358 QC M0010 DI WATER RB
Lab Sample ID: 140-17068-17
Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorodecanoic acid (PFDA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorotridecanoic acid (PFTriA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorobutanesulfonic acid (PFBS)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorononanesulfonic acid (PFNS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorononanesulfonic acid (PFNS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
Perfluorooctanesulfonamide (FOSA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
Perfluorooctanesulfonamide (FOSA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
4:2 FTS	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
4:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
6:2 FTS	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
6:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
8:2 FTS	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
8:2 FTS	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
HFPO-DA (GenX)	**5.80**		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
HFPO-DA (GenX)	**29.1**	**H B ***	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
F-53B Major	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2358 QC M0010 DI WATER RB
Lab Sample ID: 140-17068-17
Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1
F-53B Minor	ND		1.95	1.91	ng/Sample		11/07/19 13:00	11/17/19 02:09	1
F-53B Minor	ND	H	2.00	1.96	ng/Sample		10/22/19 17:20	12/20/19 23:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C4 PFBA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C5 PFPeA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C5 PFPeA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C2 PFHxA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C2 PFHxA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C4 PFHpA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C4 PFHpA	*55*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C4 PFOA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C4 PFOA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C5 PFNA	*110*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C5 PFNA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C2 PFDA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C2 PFDA	*45*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C2 PFUnA	*110*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C2 PFUnA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C2 PFDoA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C2 PFTeDA	*112*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C2 PFTeDA	*58*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
18O2 PFHxS	*60*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C4 PFOS	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C4 PFOS	*80*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C8 FOSA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
d5-NEtFOSAA	*90*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
M2-6:2 FTS	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
M2-8:2 FTS	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
M2-8:2 FTS	*60*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
M2-4:2 FTS	*87*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
M2-4:2 FTS	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*
13C3 HFPO-DA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:09*	*1*
13C3 HFPO-DA	*51*		*25 - 150*	*10/22/19 17:20*	*12/20/19 23:07*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2360 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-18

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C5 PFPeA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C4 PFHpA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C2 PFUnA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C2 PFDoA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
18O2 PFHxS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C4 PFOS	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
13C8 FOSA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:36*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2360 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-18

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	88		25 - 150	11/10/19 11:40	12/05/19 22:36	1
M2-6:2 FTS	93		25 - 150	11/10/19 11:40	12/05/19 22:36	1
M2-8:2 FTS	76		25 - 150	11/10/19 11:40	12/05/19 22:36	1
M2-4:2 FTS	91		25 - 150	11/10/19 11:40	12/05/19 22:36	1
13C3 HFPO-DA	84		25 - 150	11/10/19 11:40	12/05/19 22:36	1

Default Detection Limits

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	**Client Sample ID**	**13C8PFOA (50-150)**	**PFOS (50-150)**
140-17068-7 - RERA	A-6610,6611 QC M0010 BH BT	99	76
140-17068-10 - RERA	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	96	76
140-17068-12 - RERA	D-2356 QC M0010 XAD-2 RESIN TUBE TB	105	66

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT	10 *	10 *	10 *	9 *	10 *	9 *	9 *	9 *
140-17068-6	A-6608,6609 QC M0010 FH BT #2	63	61	62	64	60	55	56	55
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	53	69	81	82	92	86	95	99
140-17068-7	A-6610,6611 QC M0010 BH BT #2	52	51	55	52	52	48	40	46
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	109	106	108	109	108	113	109	111
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	47	46	51	55	59	56	48	54
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2	88	87	90	87	88	85	86	83
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	57	70	80	82	90	88	92	93
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	52	49	53	54	48	49	41	44
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	72	76	83	79	86	84	87	95
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	49	50	50	49	51	44	38	42
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	85	80	83	85	85	78	81	76
140-17068-17	D-2358 QC M0010 DI WATER RB	106	106	106	113	107	110	105	110
140-17068-17	D-2358 QC M0010 DI WATER RB	48	47	51	55	56	50	45	49
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	88	83	92	88	92	87	89	81
LCS 320-332701/4-D	Lab Control Sample	54	52	53	51	51	54	42	47
LCS 320-332801/2-C	Lab Control Sample	50	51	56	72	81	74	65	70
LCS 320-332801/3-C	Lab Control Sample	51	50	59	69	73	69	59	66
LCS 320-332801/4-C	Lab Control Sample	48	49	53	65	73	71	65	72
LCS 320-333418/2-C	Lab Control Sample	0.4 *	0.3 *	0.4 *	0.4 *	0.6 *	0.4 *	0.4 *	0.3 *
LCS 320-333418/2-D	Lab Control Sample	58	56	57	58	55	52	51	51
LCS 320-333418/3-C	Lab Control Sample	0.4 *	0.4 *	0.4 *	0.3 *	0.5 *	0.3 *	0.2 *	0.2 *
LCS 320-333418/3-D	Lab Control Sample	58	57	56	58	55	51	52	49
LCS 320-333418/4-C	Lab Control Sample	0.3 *	0.2 *	0.2 *	0.2 *	0.5 *	0.2 *	0.2 *	0.2 *
LCS 320-333418/4-D	Lab Control Sample	62	64	65	64	62	57	57	54
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-337397/2-C	Lab Control Sample	96	92	99	95	96	87	85	90
LCS 320-337397/3-C	Lab Control Sample	98	98	103	96	100	89	86	88
LCS 320-337397/4-C	Lab Control Sample	92	91	102	94	97	90	88	89
MB 320-332701/1-D	Method Blank	50	46	49	47	46	47	37	44
MB 320-332801/1-C	Method Blank	52	52	57	70	74	70	61	68
MB 320-333418/1-C	Method Blank	1 *	1 *	1 *	1 *	1 *	1 *	1 *	1 *
MB 320-333418/1-D	Method Blank	58	58	56	58	57	49	51	52

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-337397/1-C	Method Blank	94	89	94	92	92	91	92	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT	10 *	9 *	2 *	2 *	0.04 *	21 *	14 *	8 *
140-17068-6	A-6608,6609 QC M0010 FH BT #2	59	61	64	52	52	56	60	78
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	105	102	89	89	2 *	51	46	142
140-17068-7	A-6610,6611 QC M0010 BH BT #2	45	63	55	47	84	66	73	137
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	107	111	120	113	111	92	89	97
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	55	65	61	79	84	86	86	97
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2	89	86	86	82	81	90	92	85
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	103	95	86	82	0.6 *	26	18 *	128
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	42	56	52	44	78	64	77	135
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	98	97	69	66	68	84	88	123
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	42	57	51	45	46	46	48	120
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	83	83	81	75	75	86	84	84
140-17068-17	D-2358 QC M0010 DI WATER RB	104	112	116	103	111	90	90	97
140-17068-17	D-2358 QC M0010 DI WATER RB	50	58	60	80	79	77	86	85
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	91	86	82	86	76	85	88	93
LCS 320-332701/4-D	Lab Control Sample	45	60	54	46	51	48	53	172 *
LCS 320-332801/2-C	Lab Control Sample	76	89	60	85	81	94	99	92
LCS 320-332801/3-C	Lab Control Sample	72	81	59	82	81	87	88	90
LCS 320-332801/4-C	Lab Control Sample	79	91	58	81	83	89	88	90
LCS 320-333418/2-C	Lab Control Sample	0.3 *	0.4 *	0.3 *	0.4 *	0.2 *	0.6 *	0.6 *	0.4 *
LCS 320-333418/2-D	Lab Control Sample	53	55	61	49	52	46	53	71
LCS 320-333418/3-C	Lab Control Sample	0.3 *	0.3 *	0.2 *	0.2 *	0.2 *	0.4 *	0.5 *	0.5 *
LCS 320-333418/3-D	Lab Control Sample	54	55	61	50	50	47	51	66
LCS 320-333418/4-C	Lab Control Sample	0.2 *	0.2 *	0.2 *	0.2 *	0.2 *	0.3 *	0.4 *	0.1 *
LCS 320-333418/4-D	Lab Control Sample	61	62	67	54	57	54	55	81
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-337397/2-C	Lab Control Sample	100	91	99	85	81	83	95	113
LCS 320-337397/3-C	Lab Control Sample	99	88	94	84	81	86	98	110
LCS 320-337397/4-C	Lab Control Sample	95	93	85	75	81	86	98	108

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)	M262FTS (25-150)
MB 320-332701/1-D	Method Blank	43	54	48	42	46	43	48	144
MB 320-332801/1-C	Method Blank	70	80	64	85	86	84	88	97
MB 320-333418/1-C	Method Blank	1 *	1 *	4 *	3 *	0.5 *	2 *	1 *	2 *
MB 320-333418/1-D	Method Blank	53	53	60	50	52	45	49	59
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-337397/1-C	Method Blank	89	84	88	84	82	90	98	102

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT	8 *	8 *	3 *
140-17068-6	A-6608,6609 QC M0010 FH BT #2	64	53	63
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	133	125	60
140-17068-7	A-6610,6611 QC M0010 BH BT #2	52	76	59
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	98	87	105
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	58	50	54
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2	92	90	82
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	117	111	62
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #2	51	66	50
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	106	99	73
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	45	63	54
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	78	79	73
140-17068-17	D-2358 QC M0010 DI WATER RB	97	87	111
140-17068-17	D-2358 QC M0010 DI WATER RB	60	51	51
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	76	91	84
LCS 320-332701/4-D	Lab Control Sample	47	68	52
LCS 320-332801/2-C	Lab Control Sample	52	45	51
LCS 320-332801/3-C	Lab Control Sample	52	48	61
LCS 320-332801/4-C	Lab Control Sample	49	49	52
LCS 320-333418/2-C	Lab Control Sample	0.7 *	0.6 *	0.3 *
LCS 320-333418/2-D	Lab Control Sample	58	47	55
LCS 320-333418/3-C	Lab Control Sample	0.3 *	0.6 *	0.4 *
LCS 320-333418/3-D	Lab Control Sample	58	48	59
LCS 320-333418/4-C	Lab Control Sample	0 *	0 *	0 *
LCS 320-333418/4-D	Lab Control Sample	61	53	61
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
LCS 320-336668/4-B	Lab Control Sample	98	90	118
LCS 320-337397/2-C	Lab Control Sample	109	119	91
LCS 320-337397/3-C	Lab Control Sample	99	109	90
LCS 320-337397/4-C	Lab Control Sample	104	105	87
MB 320-332701/1-D	Method Blank	45	57	48
MB 320-332801/1-C	Method Blank	53	48	56
MB 320-333418/1-C	Method Blank	1 *	2 *	0.4 *
MB 320-333418/1-D	Method Blank	55	47	60
MB 320-336668/1-B	Method Blank	84	93	113
MB 320-337397/1-C	Method Blank	95	95	97

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-332701/1-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332701

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.993		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanoic acid (PFOA)	1.728		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
HFPO-DA (GenX)	10.20		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 15:17	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C5 PFPeA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFHxA	*49*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFHpA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFOA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C5 PFNA	*47*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFDA	*37*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFUnA	*44*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFDoA	*43*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
18O2 PFHxS	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C4 PFOS	*42*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
13C8 FOSA	*46*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
d3-NMeFOSAA	*43*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*
d5-NEtFOSAA	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 15:17*	*1*

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

Lab Sample ID: MB 320-332701/1-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332701

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	144		25 - 150	10/22/19 17:20	12/20/19 15:17	1
M2-8:2 FTS	45		25 - 150	10/22/19 17:20	12/20/19 15:17	1
M2-4:2 FTS	57		25 - 150	10/22/19 17:20	12/20/19 15:17	1
13C3 HFPO-DA	48		25 - 150	10/22/19 17:20	12/20/19 15:17	1

Lab Sample ID: LCS 320-332701/4-D
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332701

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	6.752	*	ng/Sample		17	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	5.190	*	ng/Sample		13	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	5.825	*	ng/Sample		15	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	5.722	*	ng/Sample		14	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	7.065	*	ng/Sample		18	64 - 124
Perfluorononanoic acid (PFNA)	40.0	6.406	*	ng/Sample		16	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	6.627	*	ng/Sample		17	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	6.337	*	ng/Sample		16	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	7.637	*	ng/Sample		19	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	7.842	*	ng/Sample		20	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	7.202	*	ng/Sample		18	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	1.041	*	ng/Sample		3	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	1.214	*	ng/Sample		3	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	1.652	*	ng/Sample		5	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	1.549	*	ng/Sample		4	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	1.393	*	ng/Sample		4	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	1.505	*	ng/Sample		4	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	1.519	*	ng/Sample		4	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	3.841	*	ng/Sample		10	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	11.14	*	ng/Sample		28	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	10.55	*	ng/Sample		26	65 - 125
4:2 FTS	37.4	3.778	*	ng/Sample		10	70 - 130
6:2 FTS	37.9	4.708	*	ng/Sample		12	66 - 126
8:2 FTS	38.3	6.381	*	ng/Sample		17	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	7.141	*	ng/Sample		19	70 - 130
HFPO-DA (GenX)	40.0	4.858	*	ng/Sample		12	70 - 130
F-53B Major	37.3	1.559	*	ng/Sample		4	70 - 130
F-53B Minor	37.7	2.545	*	ng/Sample		7	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	54		25 - 150
13C5 PFPeA	52		25 - 150
13C2 PFHxA	53		25 - 150
13C4 PFHpA	51		25 - 150
13C4 PFOA	51		25 - 150
13C5 PFNA	54		25 - 150
13C2 PFDA	42		25 - 150
13C2 PFUnA	47		25 - 150
13C2 PFDoA	45		25 - 150
13C2 PFTeDA	60		25 - 150
18O2 PFHxS	54		25 - 150
13C4 PFOS	46		25 - 150
13C8 FOSA	51		25 - 150
d3-NMeFOSAA	48		25 - 150
d5-NEtFOSAA	53		25 - 150
M2-6:2 FTS	172	*	25 - 150
M2-8:2 FTS	47		25 - 150
M2-4:2 FTS	68		25 - 150
13C3 HFPO-DA	52		25 - 150

Lab Sample ID: MB 320-332801/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332801

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.806		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanoic acid (PFOA)	1.863	I	1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
4:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
6:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
8:2 FTS	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1

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

Lab Sample ID: MB 320-332801/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332801

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
HFPO-DA (GenX)	1.535		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
F-53B Major	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1
F-53B Minor	ND		1.00	0.980	ng/Sample		10/22/19 17:20	12/20/19 21:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C5 PFPeA	*52*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFHxA	*57*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C4 PFHpA	*70*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C4 PFOA	*74*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C5 PFNA	*70*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFDA	*61*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFUnA	*68*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFDoA	*70*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
18O2 PFHxS	*64*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C4 PFOS	*85*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C8 FOSA	*86*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
M2-8:2 FTS	*53*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
M2-4:2 FTS	*48*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*
13C3 HFPO-DA	*56*		*25 - 150*	*10/22/19 17:20*	*12/20/19 21:47*	*1*

Lab Sample ID: LCS 320-332801/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	2.812	*	ng/Sample		7	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.281	*	ng/Sample		3	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	12.08	*	ng/Sample		30	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	26.98		ng/Sample		67	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	34.53		ng/Sample		86	64 - 124
Perfluorononanoic acid (PFNA)	40.0	38.08		ng/Sample		95	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	35.69		ng/Sample		89	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	35.85		ng/Sample		90	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	38.10		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	49.84		ng/Sample		125	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	38.73		ng/Sample		97	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0.8	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	2.416	*	ng/Sample		6	70 - 130

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

Lab Sample ID: LCS 320-332801/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	11.26	*	ng/Sample		31	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	29.79		ng/Sample		78	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	32.26		ng/Sample		87	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	32.48		ng/Sample		85	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	35.42		ng/Sample		92	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	36.18		ng/Sample		90	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.97		ng/Sample		112	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.75		ng/Sample		102	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		1	66 - 126
8:2 FTS	38.3	15.32	*	ng/Sample		40	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	10.97	*	ng/Sample		29	70 - 130
HFPO-DA (GenX)	40.0	30.23		ng/Sample		76	70 - 130
F-53B Major	37.3	35.06		ng/Sample		94	70 - 130
F-53B Minor	37.7	45.26		ng/Sample		120	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*50*		*25 - 150*
13C5 PFPeA	*51*		*25 - 150*
13C2 PFHxA	*56*		*25 - 150*
13C4 PFHpA	*72*		*25 - 150*
13C4 PFOA	*81*		*25 - 150*
13C5 PFNA	*74*		*25 - 150*
13C2 PFDA	*65*		*25 - 150*
13C2 PFUnA	*70*		*25 - 150*
13C2 PFDoA	*76*		*25 - 150*
13C2 PFTeDA	*89*		*25 - 150*
18O2 PFHxS	*60*		*25 - 150*
13C4 PFOS	*85*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*94*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
M2-6:2 FTS	*92*		*25 - 150*
M2-8:2 FTS	*52*		*25 - 150*
M2-4:2 FTS	*45*		*25 - 150*
13C3 HFPO-DA	*51*		*25 - 150*

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

Lab Sample ID: LCS 320-332801/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	3.989	*	ng/Sample		10	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.546	*	ng/Sample		4	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	11.77	*	ng/Sample		29	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	23.52	*	ng/Sample		59	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	30.01		ng/Sample		75	64 - 124
Perfluorononanoic acid (PFNA)	40.0	31.09		ng/Sample		78	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	31.71		ng/Sample		79	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	29.22		ng/Sample		73	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	36.55		ng/Sample		91	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	43.96		ng/Sample		110	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	36.96		ng/Sample		92	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		1	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	2.341	*	ng/Sample		6	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	10.77	*	ng/Sample		30	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	28.29		ng/Sample		74	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	30.34		ng/Sample		82	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	30.49		ng/Sample		79	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	33.61		ng/Sample		87	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	35.75		ng/Sample		89	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	35.84		ng/Sample		90	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	35.17		ng/Sample		88	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		1	66 - 126
8:2 FTS	38.3	12.93	*	ng/Sample		34	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	13.52	*	ng/Sample		36	70 - 130
HFPO-DA (GenX)	40.0	13.61	*	ng/Sample		34	70 - 130
F-53B Major	37.3	34.26		ng/Sample		92	70 - 130
F-53B Minor	37.7	44.55		ng/Sample		118	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*51*		*25 - 150*
13C5 PFPeA	*50*		*25 - 150*
13C2 PFHxA	*59*		*25 - 150*
13C4 PFHpA	*69*		*25 - 150*
13C4 PFOA	*73*		*25 - 150*
13C5 PFNA	*69*		*25 - 150*
13C2 PFDA	*59*		*25 - 150*

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

Lab Sample ID: LCS 320-332801/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	66		25 - 150
13C2 PFDoA	72		25 - 150
13C2 PFTeDA	81		25 - 150
18O2 PFHxS	59		25 - 150
13C4 PFOS	82		25 - 150
13C8 FOSA	81		25 - 150
d3-NMeFOSAA	87		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	52		25 - 150
M2-4:2 FTS	48		25 - 150
13C3 HFPO-DA	61		25 - 150

Lab Sample ID: LCS 320-332801/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	4.134	*	ng/Sample		10	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	1.036	*	ng/Sample		3	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	7.796	*	ng/Sample		19	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	21.78	*	ng/Sample		54	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	29.46		ng/Sample		74	64 - 124
Perfluorononanoic acid (PFNA)	40.0	35.91		ng/Sample		90	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	35.24		ng/Sample		88	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	36.87		ng/Sample		92	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	40.20		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	49.86		ng/Sample		125	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	40.88		ng/Sample		102	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0.7	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	1.864	*	ng/Sample		5	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	10.52	*	ng/Sample		29	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	27.07		ng/Sample		71	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	31.02		ng/Sample		84	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	31.49		ng/Sample		82	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	36.79		ng/Sample		95	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	34.97		ng/Sample		87	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.92		ng/Sample		92	67 - 127

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

Lab Sample ID: LCS 320-332801/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332801

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.67		ng/Sample		92	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.7	66 - 126
8:2 FTS	38.3	8.998	*	ng/Sample		23	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	13.39	*	ng/Sample		36	70 - 130
HFPO-DA (GenX)	40.0	8.918	*	ng/Sample		22	70 - 130
F-53B Major	37.3	36.98		ng/Sample		99	70 - 130
F-53B Minor	37.7	43.85		ng/Sample		116	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*48*		*25 - 150*
13C5 PFPeA	*49*		*25 - 150*
13C2 PFHxA	*53*		*25 - 150*
13C4 PFHpA	*65*		*25 - 150*
13C4 PFOA	*73*		*25 - 150*
13C5 PFNA	*71*		*25 - 150*
13C2 PFDA	*65*		*25 - 150*
13C2 PFUnA	*72*		*25 - 150*
13C2 PFDoA	*79*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
18O2 PFHxS	*58*		*25 - 150*
13C4 PFOS	*81*		*25 - 150*
13C8 FOSA	*83*		*25 - 150*
d3-NMeFOSAA	*89*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
M2-6:2 FTS	*90*		*25 - 150*
M2-8:2 FTS	*49*		*25 - 150*
M2-4:2 FTS	*49*		*25 - 150*
13C3 HFPO-DA	*52*		*25 - 150*

Lab Sample ID: MB 320-333418/1-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	78.34		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoropentanoic acid (PFPeA)	32.41		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroheptanoic acid (PFHpA)	22.30		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanoic acid (PFOA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorododecanoic acid (PFDoA)	19.97		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1

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

Lab Sample ID: MB 320-333418/1-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorohexanesulfonic acid (PFHxS)	6.312		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
Perfluorooctanesulfonamide (FOSA)	38.80		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.84		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	33.75		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
4:2 FTS	8.296		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
6:2 FTS	15.82		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
8:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	4.724		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
HFPO-DA (GenX)	237.6		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
F-53B Major	4.917		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1
F-53B Minor	6.393		1.04	1.02	ng/Sample		10/24/19 15:00	11/17/19 15:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C5 PFPeA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFHxA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFHpA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFOA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C5 PFNA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFDA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFUnA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFDoA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C2 PFTeDA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
18O2 PFHxS	*4*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C4 PFOS	*3*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C8 FOSA	*0.5*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
d3-NMeFOSAA	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
d5-NEtFOSAA	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-6:2 FTS	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-8:2 FTS	*1*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
M2-4:2 FTS	*2*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*
13C3 HFPO-DA	*0.4*	*	*25 - 150*	*10/24/19 15:00*	*11/17/19 15:07*	*1*

Lab Sample ID: MB 320-333418/1-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.230		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1

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

Lab Sample ID: MB 320-333418/1-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanoic acid (PFOA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
4:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
6:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
8:2 FTS	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
HFPO-DA (GenX)	2.568		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
F-53B Major	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1
F-53B Minor	ND		1.04	1.02	ng/Sample		10/24/19 15:00	12/03/19 18:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C5 PFPeA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFHxA	*56*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFHpA	*58*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFOA	*57*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C5 PFNA	*49*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFDA	*51*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFUnA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFDoA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C2 PFTeDA	*53*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
18O2 PFHxS	*60*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C4 PFOS	*50*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
13C8 FOSA	*52*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
d3-NMeFOSAA	*45*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
d5-NEtFOSAA	*49*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
M2-6:2 FTS	*59*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*
M2-8:2 FTS	*55*		*25 - 150*	*10/24/19 15:00*	*12/03/19 18:07*	*1*

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

Lab Sample ID: MB 320-333418/1-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	47		25 - 150	10/24/19 15:00	12/03/19 18:07	1
13C3 HFPO-DA	60		25 - 150	10/24/19 15:00	12/03/19 18:07	1

Lab Sample ID: LCS 320-333418/2-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	140.8	*	ng/Sample		352	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	56.95	*	ng/Sample		142	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.08		ng/Sample		103	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	57.72	I *	ng/Sample		144	60 - 140
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	25.81		ng/Sample		69	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.41		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	18.80	*	ng/Sample		49	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	55.05	I *	ng/Sample		148	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	32.53		ng/Sample		84	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	80.14	*	ng/Sample		200	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	28.45		ng/Sample		71	60 - 140
4:2 FTS	37.4	35.36		ng/Sample		95	60 - 140
6:2 FTS	37.9	93.92	*	ng/Sample		248	60 - 140
8:2 FTS	38.3	32.02		ng/Sample		84	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	28.92		ng/Sample		77	60 - 140
HFPO-DA (GenX)	40.0	120.8	*	ng/Sample		302	60 - 140
F-53B Major	37.3	19.17	*	ng/Sample		51	60 - 140
F-53B Minor	37.7	24.95		ng/Sample		66	60 - 140

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	0.4	*	25 - 150
13C5 PFPeA	0.3	*	25 - 150
13C2 PFHxA	0.4	*	25 - 150
13C4 PFHpA	0.4	*	25 - 150
13C4 PFOA	0.6	*	25 - 150
13C5 PFNA	0.4	*	25 - 150
13C2 PFDA	0.4	*	25 - 150
13C2 PFUnA	0.3	*	25 - 150
13C2 PFDoA	0.3	*	25 - 150
13C2 PFTeDA	0.4	*	25 - 150
18O2 PFHxS	0.3	*	25 - 150
13C4 PFOS	0.4	*	25 - 150
13C8 FOSA	0.2	*	25 - 150
d3-NMeFOSAA	0.6	*	25 - 150
d5-NEtFOSAA	0.6	*	25 - 150
M2-6:2 FTS	0.4	*	25 - 150
M2-8:2 FTS	0.7	*	25 - 150
M2-4:2 FTS	0.6	*	25 - 150
13C3 HFPO-DA	0.3	*	25 - 150

Lab Sample ID: LCS 320-333418/2-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	3.014	*	ng/Sample		8	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	ND	*	ng/Sample		0.9	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	ND	*	ng/Sample		2	64 - 124
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		2	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128

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

Lab Sample ID: LCS 320-333418/2-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.5	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.2	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		0.4	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0	70 - 130
HFPO-DA (GenX)	40.0	3.167	*	ng/Sample		8	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0.2	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*58*		*25 - 150*
13C5 PFPeA	*56*		*25 - 150*
13C2 PFHxA	*57*		*25 - 150*
13C4 PFHpA	*58*		*25 - 150*
13C4 PFOA	*55*		*25 - 150*
13C5 PFNA	*52*		*25 - 150*
13C2 PFDA	*51*		*25 - 150*
13C2 PFUnA	*51*		*25 - 150*
13C2 PFDoA	*53*		*25 - 150*
13C2 PFTeDA	*55*		*25 - 150*
18O2 PFHxS	*61*		*25 - 150*
13C4 PFOS	*49*		*25 - 150*
13C8 FOSA	*52*		*25 - 150*
d3-NMeFOSAA	*46*		*25 - 150*
d5-NEtFOSAA	*53*		*25 - 150*
M2-6:2 FTS	*71*		*25 - 150*
M2-8:2 FTS	*58*		*25 - 150*
M2-4:2 FTS	*47*		*25 - 150*
13C3 HFPO-DA	*55*		*25 - 150*

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	241.2	*	ng/Sample		603	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	33.02		ng/Sample		83	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	53.28	I	ng/Sample		133	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	44.31		ng/Sample		111	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	59.58	I *	ng/Sample		149	60 - 140
Perfluorononanoic acid (PFNA)	40.0	50.30		ng/Sample		126	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	71.08	*	ng/Sample		178	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140

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

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	48.46		ng/Sample		137	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.82	I	ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	27.12		ng/Sample		71	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	58.27	*	ng/Sample		157	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	35.73		ng/Sample		93	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	78.97	*	ng/Sample		197	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	31.12		ng/Sample		78	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	23.95		ng/Sample		60	60 - 140
4:2 FTS	37.4	24.78		ng/Sample		66	60 - 140
6:2 FTS	37.9	53.66	*	ng/Sample		142	60 - 140
8:2 FTS	38.3	ND	*	ng/Sample		0	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.03		ng/Sample		104	60 - 140
HFPO-DA (GenX)	40.0	ND	*	ng/Sample		0	60 - 140
F-53B Major	37.3	ND	*	ng/Sample		0	60 - 140
F-53B Minor	37.7	16.46	*	ng/Sample		44	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*0.4*	*	*25 - 150*
13C5 PFPeA	*0.4*	*	*25 - 150*
13C2 PFHxA	*0.4*	*	*25 - 150*
13C4 PFHpA	*0.3*	*	*25 - 150*
13C4 PFOA	*0.5*	*	*25 - 150*
13C5 PFNA	*0.3*	*	*25 - 150*
13C2 PFDA	*0.2*	*	*25 - 150*
13C2 PFUnA	*0.2*	*	*25 - 150*
13C2 PFDoA	*0.3*	*	*25 - 150*
13C2 PFTeDA	*0.3*	*	*25 - 150*
18O2 PFHxS	*0.2*	*	*25 - 150*
13C4 PFOS	*0.2*	*	*25 - 150*
13C8 FOSA	*0.2*	*	*25 - 150*
d3-NMeFOSAA	*0.4*	*	*25 - 150*
d5-NEtFOSAA	*0.5*	*	*25 - 150*
M2-6:2 FTS	*0.5*	*	*25 - 150*

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

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	0.3	*	25 - 150
M2-4:2 FTS	0.6	*	25 - 150
13C3 HFPO-DA	0.4	*	25 - 150

Lab Sample ID: LCS 320-333418/3-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	2.567	*	ng/Sample		6	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	ND	*	ng/Sample		2	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		1	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	1.217	*	ng/Sample		3	64 - 124
Perfluorononanoic acid (PFNA)	40.0	1.229	*	ng/Sample		3	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0.9	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		1	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0.9	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		2	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.9	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		1	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0.9	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		1	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0.9	70 - 130
HFPO-DA (GenX)	40.0	9.336	*	ng/Sample		23	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0.5	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0.5	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	58		25 - 150
13C5 PFPeA	57		25 - 150
13C2 PFHxA	56		25 - 150
13C4 PFHpA	58		25 - 150
13C4 PFOA	55		25 - 150
13C5 PFNA	51		25 - 150
13C2 PFDA	52		25 - 150
13C2 PFUnA	49		25 - 150
13C2 PFDoA	54		25 - 150
13C2 PFTeDA	55		25 - 150
18O2 PFHxS	61		25 - 150
13C4 PFOS	50		25 - 150
13C8 FOSA	50		25 - 150
d3-NMeFOSAA	47		25 - 150
d5-NEtFOSAA	51		25 - 150
M2-6:2 FTS	66		25 - 150
M2-8:2 FTS	58		25 - 150
M2-4:2 FTS	48		25 - 150
13C3 HFPO-DA	59		25 - 150

Lab Sample ID: LCS 320-333418/4-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	310.9	*	ng/Sample		777	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	48.36		ng/Sample		121	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	43.41	I	ng/Sample		109	60 - 140
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		0	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	60 - 140

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

Lab Sample ID: LCS 320-333418/4-C
Matrix: Air
Analysis Batch: 339368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	53.82		ng/Sample		135	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	60 - 140
4:2 FTS	37.4	ND	*	ng/Sample		0	60 - 140
6:2 FTS	37.9	121.6	*	ng/Sample		321	60 - 140
8:2 FTS	38.3	ND	*	ng/Sample		0	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	53.48	I *	ng/Sample		142	60 - 140
HFPO-DA (GenX)	40.0	ND	*	ng/Sample		0	60 - 140
F-53B Major	37.3	41.47		ng/Sample		111	60 - 140
F-53B Minor	37.7	26.33		ng/Sample		70	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*0.3*	*	*25 - 150*
13C5 PFPeA	*0.2*	*	*25 - 150*
13C2 PFHxA	*0.2*	*	*25 - 150*
13C4 PFHpA	*0.2*	*	*25 - 150*
13C4 PFOA	*0.5*	*	*25 - 150*
13C5 PFNA	*0.2*	*	*25 - 150*
13C2 PFDA	*0.2*	*	*25 - 150*
13C2 PFUnA	*0.2*	*	*25 - 150*
13C2 PFDoA	*0.2*	*	*25 - 150*
13C2 PFTeDA	*0.2*	*	*25 - 150*
18O2 PFHxS	*0.2*	*	*25 - 150*
13C4 PFOS	*0.2*	*	*25 - 150*
13C8 FOSA	*0.2*	*	*25 - 150*
d3-NMeFOSAA	*0.3*	*	*25 - 150*
d5-NEtFOSAA	*0.4*	*	*25 - 150*
M2-6:2 FTS	*0.1*	*	*25 - 150*
M2-8:2 FTS	*0*	*	*25 - 150*
M2-4:2 FTS	*0*	*	*25 - 150*
13C3 HFPO-DA	*0*	*	*25 - 150*

Lab Sample ID: LCS 320-333418/4-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	2.180	*	ng/Sample		5	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	ND	*	ng/Sample		0.8	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	ND	*	ng/Sample		0	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	ND	*	ng/Sample		0.7	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	ND	*	ng/Sample		2	64 - 124
Perfluorononanoic acid (PFNA)	40.0	ND	*	ng/Sample		1	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	ND	*	ng/Sample		0	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	ND	*	ng/Sample		1	60 - 120

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

Lab Sample ID: LCS 320-333418/4-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	ND	*	ng/Sample		0.5	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	ND	*	ng/Sample		0	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	ND	*	ng/Sample		0	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	ND	*	ng/Sample		0	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	ND	*	ng/Sample		0	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	ND	*	ng/Sample		2	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	ND	*	ng/Sample		0	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	ND	*	ng/Sample		0	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	ND	*	ng/Sample		0	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	ND	*	ng/Sample		0.5	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	ND	*	ng/Sample		0	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	ND	*	ng/Sample		0	65 - 125
4:2 FTS	37.4	ND	*	ng/Sample		0	70 - 130
6:2 FTS	37.9	ND	*	ng/Sample		0	66 - 126
8:2 FTS	38.3	ND	*	ng/Sample		0	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	ND	*	ng/Sample		0.1	70 - 130
HFPO-DA (GenX)	40.0	1.802	*	ng/Sample		5	70 - 130
F-53B Major	37.3	ND	*	ng/Sample		0	70 - 130
F-53B Minor	37.7	ND	*	ng/Sample		0.1	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*62*		*25 - 150*
13C5 PFPeA	*64*		*25 - 150*
13C2 PFHxA	*65*		*25 - 150*
13C4 PFHpA	*64*		*25 - 150*
13C4 PFOA	*62*		*25 - 150*
13C5 PFNA	*57*		*25 - 150*
13C2 PFDA	*57*		*25 - 150*
13C2 PFUnA	*54*		*25 - 150*
13C2 PFDoA	*61*		*25 - 150*
13C2 PFTeDA	*62*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*54*		*25 - 150*
13C8 FOSA	*57*		*25 - 150*
d3-NMeFOSAA	*54*		*25 - 150*
d5-NEtFOSAA	*55*		*25 - 150*
M2-6:2 FTS	*81*		*25 - 150*

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

Lab Sample ID: LCS 320-333418/4-D
Matrix: Air
Analysis Batch: 342895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 333418

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	*61*		*25 - 150*
M2-4:2 FTS	*53*		*25 - 150*
13C3 HFPO-DA	*61*		*25 - 150*

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	110		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C2 PFUnA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C2 PFDoA	104		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C2 PFTeDA	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
18O2 PFHxS	124		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C4 PFOS	108		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C8 FOSA	105		25 - 150	11/07/19 13:00	11/18/19 14:20	1
d3-NMeFOSAA	95		25 - 150	11/07/19 13:00	11/18/19 14:20	1
d5-NEtFOSAA	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-6:2 FTS	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-8:2 FTS	84		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-4:2 FTS	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C3 HFPO-DA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127

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

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*108*		*25 - 150*
13C2 PFHxA	*107*		*25 - 150*
13C4 PFHpA	*112*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*114*		*25 - 150*
13C2 PFUnA	*112*		*25 - 150*
13C2 PFDoA	*116*		*25 - 150*
13C2 PFTeDA	*119*		*25 - 150*
18O2 PFHxS	*122*		*25 - 150*
13C4 PFOS	*111*		*25 - 150*
13C8 FOSA	*104*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
M2-6:2 FTS	*95*		*25 - 150*
M2-8:2 FTS	*100*		*25 - 150*
M2-4:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*106*		*25 - 150*

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorotetradecanoic acid (PFTeA)			10.0	8.775		ng/Sample		88	68 - 128		
Perfluorobutanesulfonic acid (PFBS)			8.84	7.955		ng/Sample		90	73 - 133		
Perfluoropentanesulfonic acid (PFPeS)			9.38	8.584		ng/Sample		92	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			9.10	7.746		ng/Sample		85	63 - 123		
Perfluoroheptanesulfonic Acid (PFHpS)			9.52	9.117		ng/Sample		96	68 - 128		
Perfluorooctanesulfonic acid (PFOS)			9.28	9.036		ng/Sample		97	67 - 127		
Perfluorononanesulfonic acid (PFNS)			9.60	9.134		ng/Sample		95	70 - 130		
Perfluorodecanesulfonic acid (PFDS)			9.64	9.489		ng/Sample		98	68 - 128		
Perfluorooctanesulfonamide (FOSA)			10.0	9.940		ng/Sample		99	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			10.0	9.906		ng/Sample		99	67 - 127		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			10.0	9.768		ng/Sample		98	65 - 125		
4:2 FTS			9.34	9.915		ng/Sample		106	70 - 130		
6:2 FTS			9.48	9.822		ng/Sample		104	66 - 126		
8:2 FTS			9.58	9.688		ng/Sample		101	67 - 127		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			9.42	9.698		ng/Sample		103	70 - 130		
HFPO-DA (GenX)			10.0	10.60		ng/Sample		106	70 - 130		
F-53B Major			9.32	9.194		ng/Sample		99	70 - 130		
F-53B Minor			9.42	9.238		ng/Sample		98	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	9.275		ng/Sample		93	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	8.145		ng/Sample		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.875		ng/Sample		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	8.135		ng/Sample		89	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.753		ng/Sample		102	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.139		ng/Sample		98	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.030		ng/Sample		94	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.069		ng/Sample		94	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.913		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.16		ng/Sample		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.50		ng/Sample		105	65 - 125
4:2 FTS	9.34	10.04		ng/Sample		108	70 - 130
6:2 FTS	9.48	9.599		ng/Sample		101	66 - 126
8:2 FTS	9.58	10.33		ng/Sample		108	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	10.05		ng/Sample		107	70 - 130
HFPO-DA (GenX)	10.0	10.37		ng/Sample		104	70 - 130
F-53B Major	9.32	9.671		ng/Sample		104	70 - 130
F-53B Minor	9.42	8.429		ng/Sample		89	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	108		25 - 150
13C2 PFDoA	99		25 - 150
13C2 PFTeDA	98		25 - 150
18O2 PFHxS	114		25 - 150
13C4 PFOS	106		25 - 150
13C8 FOSA	101		25 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	82		25 - 150
M2-6:2 FTS	99		25 - 150
M2-8:2 FTS	98		25 - 150
M2-4:2 FTS	90		25 - 150
13C3 HFPO-DA	118		25 - 150

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.173		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

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

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFHxA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFUnA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C8 FOSA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-6:2 FTS	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-4:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C3 HFPO-DA	*97*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.85	B	ng/Sample		112	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.94		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	39.66		ng/Sample		99	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.15		ng/Sample		100	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	36.96		ng/Sample		92	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.49		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	43.69		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.05		ng/Sample		98	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.12		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.37		ng/Sample		97	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.67		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	47.12		ng/Sample		124	60 - 140

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	35.53		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.80		ng/Sample		98	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.62		ng/Sample		105	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.63		ng/Sample		107	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.05		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.83		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.36		ng/Sample		113	60 - 140
6:2 FTS	37.9	38.96		ng/Sample		103	60 - 140
8:2 FTS	38.3	44.75		ng/Sample		117	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.40		ng/Sample		118	60 - 140
HFPO-DA (GenX)	40.0	41.76		ng/Sample		104	60 - 140
F-53B Major	37.3	43.65		ng/Sample		117	60 - 140
F-53B Minor	37.7	31.23		ng/Sample		83	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*95*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*87*		*25 - 150*
13C2 PFDA	*85*		*25 - 150*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*85*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*83*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
M2-6:2 FTS	*113*		*25 - 150*
M2-8:2 FTS	*109*		*25 - 150*
M2-4:2 FTS	*119*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.68	B	ng/Sample		107	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.23		ng/Sample		96	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	38.79		ng/Sample		97	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.53		ng/Sample		104	60 - 140

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	40.0	38.04		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	44.18		ng/Sample		110	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	42.43		ng/Sample		106	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.24		ng/Sample		98	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.90		ng/Sample		100	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	37.86		ng/Sample		95	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.26		ng/Sample		96	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	35.60		ng/Sample		101	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.85		ng/Sample		101	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.57		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.61		ng/Sample		115	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.17		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	36.79		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.93		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.28		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.67		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.71		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.80		ng/Sample		112	60 - 140
6:2 FTS	37.9	37.37		ng/Sample		99	60 - 140
8:2 FTS	38.3	46.85		ng/Sample		122	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.98		ng/Sample		125	60 - 140
HFPO-DA (GenX)	40.0	42.47		ng/Sample		106	60 - 140
F-53B Major	37.3	40.84		ng/Sample		110	60 - 140
F-53B Minor	37.7	29.57		ng/Sample		78	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*98*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFOS	84		25 - 150
13C8 FOSA	81		25 - 150
d3-NMeFOSAA	86		25 - 150
d5-NEtFOSAA	98		25 - 150
M2-6:2 FTS	110		25 - 150
M2-8:2 FTS	99		25 - 150
M2-4:2 FTS	109		25 - 150
13C3 HFPO-DA	90		25 - 150

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.94	B	ng/Sample		107	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.34		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.14		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.86		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.08		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	41.55		ng/Sample		104	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	43.72		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	36.95		ng/Sample		92	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.64		ng/Sample		99	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.27		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.36		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.69		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.55		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.12		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.30		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.51		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.89		ng/Sample		101	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.52		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.04		ng/Sample		103	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.03		ng/Sample		105	60 - 140
4:2 FTS	37.4	43.86		ng/Sample		117	60 - 140
6:2 FTS	37.9	39.22		ng/Sample		103	60 - 140
8:2 FTS	38.3	42.23		ng/Sample		110	60 - 140

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

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

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	53.06	*	ng/Sample		141	60 - 140		
HFPO-DA (GenX)			40.0	40.53		ng/Sample		101	60 - 140		
F-53B Major			37.3	41.43		ng/Sample		111	60 - 140		
F-53B Minor			37.7	31.85		ng/Sample		85	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*91*		*25 - 150*
13C2 PFHxA	*102*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*90*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*89*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
18O2 PFHxS	*85*		*25 - 150*
13C4 PFOS	*75*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*104*		*25 - 150*
M2-4:2 FTS	*105*		*25 - 150*
13C3 HFPO-DA	*87*		*25 - 150*

LCMS

Prep Batch: 332701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	None	
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	None	
MB 320-332701/1-D	Method Blank	Total/NA	Air	None	
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 332801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	None	
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	None	
MB 320-332801/1-C	Method Blank	Total/NA	Air	None	
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 333081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	None	
140-17068-7 - RERA	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	None	
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17068-10 - RERA	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	None	
140-17068-12 - RERA	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	None	

Cleanup Batch: 333287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Split	332701
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	332701
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Split	332701
MB 320-332701/1-D	Method Blank	Total/NA	Air	Split	332701
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Split	332701

Prep Batch: 333418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	None	
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	None	
MB 320-333418/1-C	Method Blank	Total/NA	Air	None	
MB 320-333418/1-D	Method Blank	Total/NA	Air	None	
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 333704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	Preparation	332801
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	Preparation	332801
MB 320-332801/1-C	Method Blank	Total/NA	Air	Preparation	332801
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	Preparation	332801

LCMS (Continued)

Cleanup Batch: 333704 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	Preparation	332801
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	Preparation	332801

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	None	
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	Preparation	336668
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

Cleanup Batch: 337394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	Split	333418
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	Split	333418
MB 320-333418/1-C	Method Blank	Total/NA	Air	Split	333418
MB 320-333418/1-D	Method Blank	Total/NA	Air	Split	333418
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	Split	333418
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Split	333418

Cleanup Batch: 337395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Split	333081
140-17068-7 - RERA	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Split	333081
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17068-10 - RERA	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	333081
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Split	333081
140-17068-12 - RERA	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Split	333081

Prep Batch: 337397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	None	
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE R	Total/NA	Air	None	
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	None	
MB 320-337397/1-C	Method Blank	Total/NA	Air	None	
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	None	

LCMS (Continued)

Prep Batch: 337397 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 337477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Preparation	333287
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	333287
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Preparation	333287
MB 320-332701/1-D	Method Blank	Total/NA	Air	Preparation	333287
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Preparation	333287

Cleanup Batch: 338203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	Preparation	337394
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	Preparation	337394
MB 320-333418/1-C	Method Blank	Total/NA	Air	Preparation	337394
MB 320-333418/1-D	Method Blank	Total/NA	Air	Preparation	337394
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	Preparation	337394
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Preparation	337394

Cleanup Batch: 338212

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Preparation	337395
140-17068-7 - RERA	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Preparation	337395
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17068-10 - RERA	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	337395
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Preparation	337395
140-17068-12 - RERA	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Preparation	337395

Cleanup Batch: 338295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	Split	337397
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE R	Total/NA	Air	Split	337397
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Split	337397
MB 320-337397/1-C	Method Blank	Total/NA	Air	Split	337397
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Split	337397

Cleanup Batch: 338717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	Preparation	338295
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE R	Total/NA	Air	Preparation	338295
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Preparation	338295
MB 320-337397/1-C	Method Blank	Total/NA	Air	Preparation	338295
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Preparation	338295

LCMS

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	537 (modified)	336880
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6 - RE	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	537 (modified)	338203
MB 320-333418/1-C	Method Blank	Total/NA	Air	537 (modified)	338203
LCS 320-333418/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203
LCS 320-333418/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203
LCS 320-333418/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338203

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7 - RE	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	537 (modified)	338212
140-17068-10 - RE	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17068-12 - RE	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	537 (modified)	338212

Cleanup Batch: 341397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	Dilution	337477
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Dilution	337477
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Dilution	337477
MB 320-332701/1-D	Method Blank	Total/NA	Air	Dilution	337477
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	Dilution	337477

Cleanup Batch: 341427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	Dilution	338203
MB 320-333418/1-D	Method Blank	Total/NA	Air	Dilution	338203
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	Dilution	338203
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	Dilution	338203
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	Dilution	338203

Cleanup Batch: 341442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	Dilution	333704
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	Dilution	333704
MB 320-332801/1-C	Method Blank	Total/NA	Air	Dilution	333704
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	Dilution	333704
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	Dilution	333704
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	Dilution	333704

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

LCMS

Analysis Batch: 342895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Total/NA	Air	537 (modified)	341427
MB 320-333418/1-D	Method Blank	Total/NA	Air	537 (modified)	341427
LCS 320-333418/2-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427
LCS 320-333418/3-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427
LCS 320-333418/4-D	Lab Control Sample	Total/NA	Air	537 (modified)	341427

Analysis Batch: 343137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717

Analysis Batch: 343812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	537 (modified)	338717
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE R	Total/NA	Air	537 (modified)	338717
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	537 (modified)	338717
MB 320-337397/1-C	Method Blank	Total/NA	Air	537 (modified)	338717

Analysis Batch: 347676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	537 (modified)	341397
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	341397
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	537 (modified)	341397
MB 320-332701/1-D	Method Blank	Total/NA	Air	537 (modified)	341397
LCS 320-332701/4-D	Lab Control Sample	Total/NA	Air	537 (modified)	341397

Analysis Batch: 347688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Total/NA	Air	537 (modified)	341442
140-17068-17	D-2358 QC M0010 DI WATER RB	Total/NA	Air	537 (modified)	341442
MB 320-332801/1-C	Method Blank	Total/NA	Air	537 (modified)	341442
LCS 320-332801/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442
LCS 320-332801/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442
LCS 320-332801/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	341442

Analysis Batch: 349845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-7 - RERA	A-6610,6611 QC M0010 BH BT #2	Total/NA	Air	537 (modified)	338212
140-17068-10 - RERA	A-6614 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338212
140-17068-12 - RERA	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	537 (modified)	338212

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: A-6608,6609 QC M0010 FH BT #2

Lab Sample ID: 140-17068-6

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split	RE		12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			339368	11/17/19 16:14	S1M	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 19:17	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6610,6611 QC M0010 BH BT #2

Lab Sample ID: 140-17068-7

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 18:51	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 17:27	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 12:58	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2

Lab Sample ID: 140-17068-8

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.12308 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:50	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6612 QC M0010 IMP 1,2&3 COND BT #2

Lab Sample ID: 140-17068-8

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.49231 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2

Lab Sample ID: 140-17068-9

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 21:16	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2

Lab Sample ID: 140-17068-10

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 19:01	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	400 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			200 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 17:37	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 13:08	JRB	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2356 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-12

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None	RE		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RE		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RE		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			340430	11/21/19 19:10	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 17:48	P1N	TAL SAC
	Instrument ID: A9_NC									
Total/NA	Prep	None	RERA		1 Sample	360 mL	333081	10/23/19 16:00		TAL SAC
Total/NA	Cleanup	Split	RERA		90 mL	2 mL	337395	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation	RERA		2 mL	10.00 mL	338212	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)	RERA	1			349845	01/09/20 13:18	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-16

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:26	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: D-2358 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-17

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.12821 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:09	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			0.5 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 23:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: D-2360 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-18

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:36	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: Method Blank

Lab Sample ID: MB 320-332701/1-D

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank

Lab Sample ID: MB 320-332801/1-C

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank

Lab Sample ID: MB 320-333418/1-C

Date Collected: N/A
Date Received: N/A

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:07	S1M	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: Method Blank
Lab Sample ID: MB 320-333418/1-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:07	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336668/1-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-337397/1-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 20:26	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332701/4-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332701	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Split			150 mL	10 mL	333287	10/24/19 10:25		TAL SAC
Total/NA	Cleanup	Preparation			5 mL	10.00 mL	337477	11/11/19 05:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341397	11/25/19 11:51	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 15:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	300 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			75 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-332801/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	200 mL	332801	10/22/19 17:20		TAL SAC
Total/NA	Cleanup	Preparation			50 mL	10.00 mL	333704	10/25/19 12:00		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341442	11/25/19 12:52	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 22:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:16	S1M	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-333418/2-D
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:17	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-333418/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:26	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-333418/3-D
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:27	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-333418/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			339368	11/17/19 15:36	S1M	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-333418/4-D
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	333418	10/24/19 15:00		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337394	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338203	11/13/19 13:20		TAL SAC
Total/NA	Cleanup	Dilution			500 uL	500 uL	341427	11/25/19 12:21	GMK	TAL SAC
Total/NA	Analysis	537 (modified)		1			342895	12/03/19 18:37	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-337397/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:45	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:55	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 13:05	GMK	TAL SAC
	Instrument ID: A9									

Laboratory References:

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Job ID: 140-17068-3

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
Dilution	Dilution and Re-fortification of Standards	None	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-3
Project/Site: M0010 QC Samples (MeOH Re-extraction)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17068-6	A-6608,6609 QC M0010 FH BT #2	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-7	A-6610,6611 QC M0010 BH BT #2	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-8	A-6612 QC M0010 IMP 1,2&3 COND BT #2	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-9	A-6613 QC M0010 IMP GLASSWARE MEOH RINSE BT #2	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-10	A-6614 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #2	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-12	D-2356 QC M0010 XAD-2 RESIN TUBE TB	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-16	D-2357 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	10/16/19 00:00	10/19/19 09:30	
140-17068-17	D-2358 QC M0010 DI WATER RB	Air	10/16/19 00:00	10/19/19 09:30	
140-17068-18	D-2360 QC M0010 MEOH WITH 5% NH4OH RB	Air	10/16/19 00:00	10/19/19 09:30	

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility
Stack Testing for PFAS – Field QC Samples

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Packag	140-17068 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field BLANKS & Proof & Trip

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6601 QC M0010 Filter BT #1 (Combine with *A-6602*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6602 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #1 (Combine with *A-6601*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6603 QC M0010 XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6604 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #1 (Combine with *A-6603*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6605 QC M0010 Impingers 1,2 & 3 Condensate BT #1	QC	10/15/19	Blank Train #1	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6606 QC M0010 Impinger Glassware MeOH Rinse BT #1	QC	10/15/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6607 QC M0010 Breakthrough XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6608 QC M0010 Filter BT #2 (Combine with *A-6609*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6609 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #2 (Combine with *A-6608*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6610 QC M0010 XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6611 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #2 (Combine with *A-6610*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 QC M0010 Impingers 1,2 & 3 Condensate BT #2	QC	10/15/19	Blank Train #2	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6613 QC M0010 Impinger Glassware MeOH Rinse BT #2	QC	10/15/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

x2

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 QC M0010 Breakthrough XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 QC M0010 XAD-2 Resin Tube TB $ D2356 Included	QC	10/13/19 10-15-19	Trip Blank	XAD-2 Resin Tube	**XAD-2 Resin Tube Trip Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/14/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6617 QC M0010 DI Water RB	QC	10/13/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6618 QC M0010 MeOH with 5% NH_4OH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4 C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FedEx # 7767 5942 3982 FOS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19 11:45
Accepted By:	W.M. Hoover	AST	10/17/19 11:45
Relinquished By:	W.M. Hoover	AST	10/18/19
Accepted By:	Amy Damon	ETA KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
D-2357 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/16/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2358 QC M0010 DI Water RB	QC	10/16/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2359 QC M0010 $MeCl_2$ RB	QC	NC	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methylene Chloride ($MeCl_2$) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2360 QC M0010 MeOH with 5% NH_4OH RB	QC	10/16/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4'C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX# 776539422982m FOS

Custody Transfer:

		Name	Company	Date/Time
Relinquished By:		Dony Calill	ETA	10/17/19 12:00
Accepted By:			AST	10/17/19 12:30
Relinquished By:			AST	10/18/19 11:3
Accepted By:			ETA KNX	10-19-19 09:30
Relinquished By:				
Accepted By:				
Relinquished By:				
Accepted By:				

Loc: 140
17068

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓	✓		☑ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

4, A-6616, A-6617, A-6618

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: Ryan Norman Date: 10-21-19

QA026R32.doc, 062719

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-17068-3

Login Number: 17068
List Number: 3
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1046130/1046139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Prep Method	Analyte Description	CAS Number	RL	MDL	Units
Back Half	Perfluorobutanoic acid (PFBA)	375-22-4	7.20	3.59	ng/Sample
	Perfluoropentanoic acid (PFPeA)	2706-90-3	0.800	0.400	ng/Sample
	Perfluorohexanoic acid (PFHxA)	307-24-4	1.40	0.717	ng/Sample
	Perfluoroheptanoic acid (PFHpA)	375-85-9	0.700	0.345	ng/Sample
	Perfluorooctanoic acid (PFOA)	335-67-1	0.900	0.434	ng/Sample
	Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.191	ng/Sample
	Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.130	ng/Sample
	Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.700	0.325	ng/Sample
	Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.101	ng/Sample
	Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.156	ng/Sample
	Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.211	ng/Sample
	Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.167	ng/Sample
	Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.245	ng/Sample
	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.700	0.351	ng/Sample
	Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0990	ng/Sample
	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	1.10	0.538	ng/Sample
	Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.233	ng/Sample
	Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.165	ng/Sample
	Perfluorooctanesulfonamide (FOSA)	754-91-6	0.500	0.191	ng/Sample
	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.600	0.313	ng/Sample
	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.700	0.332	ng/Sample
	4:2 FTS	757124-72-4	0.500	0.191	ng/Sample
	6:2 FTS	27619-97-2	0.500	0.179	ng/Sample
	8:2 FTS	39108-34-4	0.700	0.366	ng/Sample
	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.600	0.311	ng/Sample
	HFPO-DA (GenX)	13252-13-6	1.60	0.814	ng/Sample
	F-53B Major	756426-58-1	0.500	0.182	ng/Sample
	F-53B Minor	763051-92-9	0.500	0.150	ng/Sample

Prep Method	Analyte Description	CAS Number	RL	MDL	Units
Front Half	Perfluorobutanoic acid (PFBA)	375-22-4	3.90	1.93	ng/Sample
	Perfluoropentanoic acid (PFPeA)	2706-90-3	0.500	0.134	ng/Sample
	Perfluorohexanoic acid (PFHxA)	307-24-4	0.500	0.100	ng/Sample
	Perfluoroheptanoic acid (PFHpA)	375-85-9	0.500	0.167	ng/Sample
	Perfluorooctanoic acid (PFOA)	335-67-1	0.900	0.472	ng/Sample
	Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.165	ng/Sample
	Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.107	ng/Sample
	Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.700	0.344	ng/Sample
	Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.147	ng/Sample
	Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.0860	ng/Sample
	Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.145	ng/Sample
	Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.128	ng/Sample
	Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.109	ng/Sample
	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.500	0.241	ng/Sample
	Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0920	ng/Sample
	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.500	0.102	ng/Sample
	Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.130	ng/Sample
	Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.116	ng/Sample
	Perfluorooctanesulfonamide (FOSA)	754-91-6	0.500	0.126	ng/Sample
	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	1.00	0.509	ng/Sample
	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.900	0.458	ng/Sample
	4:2 FTS	757124-72-4	0.500	0.263	ng/Sample
	6:2 FTS	27619-97-2	0.500	0.167	ng/Sample
	8:2 FTS	39108-34-4	0.500	0.272	ng/Sample
	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.500	0.0600	ng/Sample
	HFPO-DA (GenX)	13252-13-6	3.00	1.51	ng/Sample
	F-53B Major	756426-58-1	0.500	0.215	ng/Sample
	F-53B Minor	763051-92-9	0.500	0.247	ng/Sample

Prep Method	Analyte Description	CAS Number	RL	MDL	Units
Condensate	Perfluorobutanoic acid (PFBA)	375-22-4	1.50	0.730	ng/Sample
	Perfluoropentanoic acid (PFPeA)	2706-90-3	0.500	0.0550	ng/Sample
	Perfluorohexanoic acid (PFHxA)	307-24-4	0.500	0.101	ng/Sample
	Perfluoroheptanoic acid (PFHpA)	375-85-9	0.500	0.107	ng/Sample
	Perfluorooctanoic acid (PFOA)	335-67-1	0.700	0.370	ng/Sample
	Perfluorononanoic acid (PFNA)	375-95-1	0.500	0.100	ng/Sample
	Perfluorodecanoic acid (PFDA)	335-76-2	0.500	0.149	ng/Sample
	Perfluoroundecanoic acid (PFUnA)	2058-94-8	0.600	0.324	ng/Sample
	Perfluorododecanoic acid (PFDoA)	307-55-1	0.500	0.110	ng/Sample
	Perfluorotridecanoic acid (PFTriA)	72629-94-8	0.500	0.106	ng/Sample
	Perfluorotetradecanoic acid (PFTeA)	376-06-7	0.500	0.222	ng/Sample
	Perfluorobutanesulfonic acid (PFBS)	375-73-5	0.500	0.215	ng/Sample
	Perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.500	0.0750	ng/Sample
	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.500	0.232	ng/Sample
	Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	0.500	0.0630	ng/Sample
	Perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.800	0.420	ng/Sample
	Perfluorononanesulfonic acid (PFNS)	68259-12-1	0.500	0.0600	ng/Sample
	Perfluorodecanesulfonic acid (PFDS)	335-77-3	0.500	0.233	ng/Sample
	Perfluorooctanesulfonamide (FOSA)	754-91-6	1.00	0.507	ng/Sample
	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.800	0.384	ng/Sample
	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.800	0.389	ng/Sample
	4:2 FTS	757124-72-4	0.500	0.137	ng/Sample
	6:2 FTS	27619-97-2	1.00	0.520	ng/Sample
	8:2 FTS	39108-34-4	0.500	0.168	ng/Sample
	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.500	0.0350	ng/Sample
	HFPO-DA (GenX)	13252-13-6	12.0	5.98	ng/Sample
	F-53B Major	756426-58-1	0.500	0.109	ng/Sample
	F-53B Minor	763051-92-9	0.500	0.150	ng/Sample

PFAS EMISSIONS
Soil Analysis

Analyte	Stake 66	BAGHOUSE	STAKE 67	STAKE 68	STAKE 69	STAKE 70	SCRUBBER WATER	FRESH WATER	PRETREATED SOIL 1		
	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	ng/L	ng/L	µg/Kg	mg/Ton	mg/hr
Perfluorobutanoic acid (PFBA)	0.0537	0.043	0.0335	0.0319	0.0525	0.0659	1.75	0.935	0.12	0.1089	0.3266
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	0.968	0.681	0.281	0.2549	0.7648
Perfluorohexanoic acid (PFHxA)	0.752	ND	ND	ND	ND	ND	1.03	0.703	0.222	0.2014	0.6042
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	0.677	0.399	0.176	0.1597	0.4790
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	2.84	1.53	0.238	0.2159	0.6477
Perfluorononanoic acid (PFNA)	ND	ND	ND	ND	ND	ND	ND	ND	0.0797	0.0723	0.2169
Perfluorodecanoic acid (PFDA)	0.0257	ND	ND	ND	ND	ND	ND	ND	0.025	0.0227	0.0680
Perfluoroundecanoic acid (PFUnA)	0.0702	ND	ND	ND	ND	ND	ND	ND	0.0524	0.0475	0.1426
Perfluorododecanoic acid (PFDoA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTriA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	0.25	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)	ND	ND	ND	ND	ND	ND	ND	ND	0.023	0.0209	0.0626
Perfluorohexanesulfonic acid (PFHxS)	0.0582	ND	0.033	ND	ND	ND	ND	0.349	0.331	0.3003	0.9008
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	0.44	0.209	ND	ND	ND	0.177	ND	ND	1.48	1.3426	4.0279
Perfluorononanesulfonic acid (PFNS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid (PFDS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (FOSA)	ND	ND	ND	ND	ND	ND	ND	1.31	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6:2 FTS	ND	ND	ND	ND	ND	ND	4.04	ND	ND	ND	ND
8:2 FTS	ND	ND	ND	ND	ND	ND	3.4	ND	0.506	0.4590	1.3771
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HFPO-DA (GenX)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Major	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
F-53B Minor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
											3 TONS/HR
In Soil analysis but not in air analysis:											
Perfluorododecanesulfonic acid (PFDoS)	ND	ND	ND	ND	ND	ND	ND	ND	ND		
NEtFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND		
NMeFOSA	ND	ND	ND	ND	ND	ND	ND	ND	ND		
NMeFOSE	ND	ND	ND	ND	ND	ND	ND	ND	0.0778		
NEtFOSE	ND	ND	ND	ND	ND	ND	ND	ND	ND		
10:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	0.0636		

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-18101-1
Client Project/Site: EPA OIT/NRC PFAS Test

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
2/18/2020 9:35:21 AM

Courtney Adkins, Project Manager II
(865)291-3000
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-18101-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-18101-1

Sample Receipt

The samples were received on January 30, 2020 at 9:15 AM. The temperature of the cooler at receipt was 8.6º C.

Receipt Exceptions

All samples were received at the laboratory outside the required temperature criteria.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The COC has no relinquished date or time.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC list sample as solid it should be water.

The following samples were received outside of holding time: STAKE 66 (140-18101-1), STAKE 66 (140-18101-1[MS]), STAKE 66 (140-18101-1[MSD]), BAGHOUSE (140-18101-2), STAKE 67 (140-18101-3), STAKE 68 (140-18101-4), STAKE 69 (140-18101-5), STAKE 70 (140-18101-6), SCRUBBER WATER (140-18101-7), SCRUBBER WATER (140-18101-7[MS]), SCRUBBER WATER (140-18101-7[MSD]), FRESH WATER (140-18101-8) and PRETREATED SOIL 1 (140-18101-9).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

LCMS

Method 537 (modified): The sample duplicate (DUP) precision for Perfluorobutanoic acid (PFBA) and Perfluoroheptanoic acid (PFHpA) forpreparation batch 320-354584 and analytical batch 320-355234 was outside control limits. Sample matrix interference is suspected.

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

General Chemistry

Method Moisture: No percent moisture was found in the following sample in analytical batch 320-354660 due to hygroscopic characteristics. The matrix of the sample was dry, powdery sand. The sample was reweighed and there was no change in weight. Sample was not reanalyzed and is being reported with this narration. BAGHOUSE (140-18101-2)

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

Organic Prep

Method 3535: The following samples have sediment at the bottom of the sample bottle prior to extraction: SCRUBBER WATER (140-18101-7) and (140-18101-A-7 DU).

Method 3535: The following samples have floating particulates inside the sample bottle prior to extraction: FRESH WATER (140-18101-8).

Method 3535: During the extraction process, the following samples have non-settleable particulates which clogged the solid-phase extraction column: SCRUBBER WATER (140-18101-7) and (140-18101-A-7 DU).

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1
Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0537**	**J H H3 B**	0.192	0.0268	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.192	0.0738	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorohexanoic acid (PFHxA)	**0.0752**	**J H H3**	0.192	0.0402	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.192	0.0278	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.192	0.0824	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorodecanoic acid (PFDA)	**0.0257**	**J H H3**	0.192	0.0211	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroundecanoic acid (PFUnA)	**0.0702**	**J H H3**	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.192	0.0642	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.192	0.0489	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.192	0.0517	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.192	0.0239	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.192	0.0192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0582**	**J H H3**	0.192	0.0297	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.192	0.0335	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanesulfonic acid (PFOS)	**0.440**	**J H H3**	0.479	0.192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.192	0.0192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.192	0.0374	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.192	0.0575	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.192	0.0785	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NEtFOSA	ND	H H3	0.192	0.0230	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NMeFOSA	ND	H H3	0.192	0.0393	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.92	0.374	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.92	0.354	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NMeFOSE	ND	H H3	0.192	0.0680	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NEtFOSE	ND	H H3	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
4:2 FTS	ND	H H3	1.92	0.354	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
6:2 FTS	ND	H H3	1.92	0.144	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
8:2 FTS	ND	H H3	1.92	0.239	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
10:2 FTS	ND	H H3	0.192	0.0479	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
DONA	ND	H H3	0.192	0.0172	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
HFPO-DA (GenX)	ND	H H3	0.239	0.105	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
F-53B Major	ND	H H3	0.192	0.0259	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
F-53B Minor	ND	H H3	0.192	0.0211	ug/Kg		02/03/20 11:18	02/10/20 23:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C5 PFPeA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFHxA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C4 PFHpA	*72*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C4 PFOA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C5 PFNA	*75*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFDA	*74*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFUnA	*80*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*

Client Sample ID: STAKE 66

Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1

Matrix: Solid

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	86		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C2 PFTeDA	86		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C3 PFBS	71		25 - 150	02/03/20 11:18	02/10/20 23:12	1
18O2 PFHxS	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C4 PFOS	67		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C8 FOSA	63		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d3-NMeFOSAA	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d5-NEtFOSAA	85		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d-N-MeFOSA-M	57		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d-N-EtFOSA-M	56		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d7-N-MeFOSE-M	12		10 - 120	02/03/20 11:18	02/10/20 23:12	1
d9-N-EtFOSE-M	13		10 - 120	02/03/20 11:18	02/10/20 23:12	1
M2-4:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 23:12	1
M2-6:2 FTS	68		25 - 150	02/03/20 11:18	02/10/20 23:12	1
M2-8:2 FTS	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C3 HFPO-DA	60		25 - 150	02/03/20 11:18	02/10/20 23:12	1

Client Sample ID: BAGHOUSE

Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0430**	**J H H3 B**	0.187	0.0262	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.187	0.0721	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.187	0.0393	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.187	0.0272	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.187	0.0805	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.187	0.0206	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.187	0.0627	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.187	0.0478	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.187	0.0506	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.187	0.0234	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.187	0.0187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.187	0.0290	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.187	0.0328	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanesulfonic acid (PFOS)	**0.209**	**J H H3**	0.468	0.187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.187	0.0187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.187	0.0365	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.187	0.0562	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.187	0.0768	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NEtFOSA	ND	H H3	0.187	0.0225	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NMeFOSA	ND	H H3	0.187	0.0384	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.87	0.365	ug/Kg		02/03/20 11:18	02/10/20 23:42	1

Client Sample ID: BAGHOUSE

Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.87	0.346	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NMeFOSE	ND	H H3	0.187	0.0665	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NEtFOSE	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
4:2 FTS	ND	H H3	1.87	0.346	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
6:2 FTS	ND	H H3	1.87	0.140	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
8:2 FTS	ND	H H3	1.87	0.234	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
10:2 FTS	ND	H H3	0.187	0.0468	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
DONA	ND	H H3	0.187	0.0169	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
HFPO-DA (GenX)	ND	H H3	0.234	0.103	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
F-53B Major	ND	H H3	0.187	0.0253	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
F-53B Minor	ND	H H3	0.187	0.0206	ug/Kg		02/03/20 11:18	02/10/20 23:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C5 PFPeA	*59*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFHxA	*67*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFHpA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFOA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C5 PFNA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFDA	*74*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFUnA	*77*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFDoA	*79*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFTeDA	*75*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C3 PFBS	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
18O2 PFHxS	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFOS	*60*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C8 FOSA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d3-NMeFOSAA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d5-NEtFOSAA	*66*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d-N-MeFOSA-M	*32*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d-N-EtFOSA-M	*29*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d7-N-MeFOSE-M	*12*		*10 - 120*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d9-N-EtFOSE-M	*12*		*10 - 120*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-4:2 FTS	*41*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-6:2 FTS	*39*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-8:2 FTS	*42*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C3 HFPO-DA	*56*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*

Client Sample ID: STAKE 67

Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0335**	**J H H3 B**	0.196	0.0274	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.196	0.0753	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.196	0.0411	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.196	0.0284	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.196	0.0841	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 67
Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.196	0.0656	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.196	0.0499	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.196	0.0528	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.196	0.0245	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0330**	**J H H3**	0.196	0.0303	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.196	0.0342	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.489	0.196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.196	0.0382	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.196	0.0587	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.196	0.0802	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NEtFOSA	ND	H H3	0.196	0.0235	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NMeFOSA	ND	H H3	0.196	0.0401	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	0.382	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NMeFOSE	ND	H H3	0.196	0.0695	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NEtFOSE	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
4:2 FTS	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
6:2 FTS	ND	H H3	1.96	0.147	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
8:2 FTS	ND	H H3	1.96	0.245	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
10:2 FTS	ND	H H3	0.196	0.0489	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
DONA	ND	H H3	0.196	0.0176	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
HFPO-DA (GenX)	ND	H H3	0.245	0.108	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
F-53B Major	ND	H H3	0.196	0.0264	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
F-53B Minor	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/10/20 23:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C5 PFPeA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFHxA	*66*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFHpA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFOA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C5 PFNA	*68*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFDA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFUnA	*76*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFDoA	*77*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C3 PFBS	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
18O2 PFHxS	*64*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFOS	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C8 FOSA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*

Client Sample ID: STAKE 67

Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3

Matrix: Solid

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d-N-MeFOSA-M	51		25 - 150	02/03/20 11:18	02/10/20 23:52	1
d-N-EtFOSA-M	51		25 - 150	02/03/20 11:18	02/10/20 23:52	1
d7-N-MeFOSE-M	20		10 - 120	02/03/20 11:18	02/10/20 23:52	1
d9-N-EtFOSE-M	22		10 - 120	02/03/20 11:18	02/10/20 23:52	1
M2-4:2 FTS	66		25 - 150	02/03/20 11:18	02/10/20 23:52	1
M2-6:2 FTS	60		25 - 150	02/03/20 11:18	02/10/20 23:52	1
M2-8:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 23:52	1
13C3 HFPO-DA	62		25 - 150	02/03/20 11:18	02/10/20 23:52	1

Client Sample ID: STAKE 68

Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0319**	**J H H3 B**	0.182	0.0255	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.182	0.0700	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.182	0.0382	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.182	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.182	0.0782	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.182	0.0609	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.182	0.0464	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.182	0.0491	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.182	0.0227	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.182	0.0282	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.182	0.0318	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.455	0.182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.182	0.0355	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.182	0.0545	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.182	0.0745	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NEtFOSA	ND	H H3	0.182	0.0218	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NMeFOSA	ND	H H3	0.182	0.0373	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.82	0.355	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.82	0.336	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NMeFOSE	ND	H H3	0.182	0.0645	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NEtFOSE	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
4:2 FTS	ND	H H3	1.82	0.336	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
6:2 FTS	ND	H H3	1.82	0.136	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
8:2 FTS	ND	H H3	1.82	0.227	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
10:2 FTS	ND	H H3	0.182	0.0455	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
DONA	ND	H H3	0.182	0.0164	ug/Kg		02/03/20 11:18	02/11/20 00:02	1

Client Sample ID: STAKE 68

Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA (GenX)	ND	H H3	0.227	0.100	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
F-53B Major	ND	H H3	0.182	0.0245	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
F-53B Minor	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C5 PFPeA	*64*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFHxA	*71*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFHpA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFOA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C5 PFNA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFDA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFUnA	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFDoA	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C3 PFBS	*70*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
18O2 PFHxS	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFOS	*71*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C8 FOSA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d3-NMeFOSAA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d5-NEtFOSAA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d-N-MeFOSA-M	*62*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d-N-EtFOSA-M	*61*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d7-N-MeFOSE-M	*32*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d9-N-EtFOSE-M	*32*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-4:2 FTS	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-6:2 FTS	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-8:2 FTS	*109*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C3 HFPO-DA	*59*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*

Client Sample ID: STAKE 69

Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0525**	**J H H3 B**	0.196	0.0274	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.196	0.0753	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.196	0.0411	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.196	0.0284	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.196	0.0841	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.196	0.0656	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.196	0.0499	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.196	0.0528	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.196	0.0245	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.196	0.0303	ug/Kg		02/03/20 11:18	02/11/20 00:12	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 69
Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.196	0.0342	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.489	0.196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.196	0.0382	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.196	0.0587	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.196	0.0802	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NEtFOSA	ND	H H3	0.196	0.0235	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NMeFOSA	ND	H H3	0.196	0.0401	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	0.382	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NMeFOSE	ND	H H3	0.196	0.0695	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NEtFOSE	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
4:2 FTS	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
6:2 FTS	ND	H H3	1.96	0.147	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
8:2 FTS	ND	H H3	1.96	0.245	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
10:2 FTS	ND	H H3	0.196	0.0489	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
DONA	ND	H H3	0.196	0.0176	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
HFPO-DA (GenX)	ND	H H3	0.245	0.108	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
F-53B Major	ND	H H3	0.196	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
F-53B Minor	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/11/20 00:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C5 PFPeA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFHxA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFHpA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFOA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C5 PFNA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFDA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFUnA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFDoA	*84*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C3 PFBS	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
18O2 PFHxS	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFOS	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C8 FOSA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d3-NMeFOSAA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d-N-MeFOSA-M	*59*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d-N-EtFOSA-M	*60*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d7-N-MeFOSE-M	*28*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d9-N-EtFOSE-M	*28*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-4:2 FTS	*66*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-6:2 FTS	*63*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-8:2 FTS	*106*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C3 HFPO-DA	*64*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 70
Date Collected: 10/16/19 14:25
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-6
Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0659**	**J H H3 B**	0.171	0.0239	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.171	0.0658	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.171	0.0359	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.171	0.0248	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.171	0.0735	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.171	0.0188	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.171	0.0573	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.171	0.0436	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.171	0.0462	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.171	0.0214	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.171	0.0171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.171	0.0265	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.171	0.0299	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanesulfonic acid (PFOS)	**0.177**	**J H H3**	0.427	0.171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.171	0.0171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.171	0.0333	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.171	0.0513	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.171	0.0701	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NEtFOSA	ND	H H3	0.171	0.0205	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NMeFOSA	ND	H H3	0.171	0.0350	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.71	0.333	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.71	0.316	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NMeFOSE	ND	H H3	0.171	0.0607	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NEtFOSE	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
4:2 FTS	ND	H H3	1.71	0.316	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
6:2 FTS	ND	H H3	1.71	0.128	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
8:2 FTS	ND	H H3	1.71	0.214	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
10:2 FTS	ND	H H3	0.171	0.0427	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
DONA	ND	H H3	0.171	0.0154	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
HFPO-DA (GenX)	ND	H H3	0.214	0.0940	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
F-53B Major	ND	H H3	0.171	0.0231	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
F-53B Minor	ND	H H3	0.171	0.0188	ug/Kg		02/03/20 11:18	02/12/20 02:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C5 PFPeA	*78*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFHxA	*87*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFHpA	*92*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFOA	*91*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C5 PFNA	*94*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFDA	*93*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFUnA	*101*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFDoA	*98*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*

Client Sample ID: STAKE 70

Lab Sample ID: 140-18101-6

Date Collected: 10/16/19 14:25
Matrix: Solid
Date Received: 01/30/20 09:15

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 PFBS	*84*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
18O2 PFHxS	*88*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFOS	*82*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C8 FOSA	*87*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d5-NEtFOSAA	*81*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d-N-MeFOSA-M	*54*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d-N-EtFOSA-M	*57*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d7-N-MeFOSE-M	*21*		*10 - 120*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d9-N-EtFOSE-M	*24*		*10 - 120*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-4:2 FTS	*59*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-6:2 FTS	*65*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-8:2 FTS	*82*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*

Client Sample ID: SCRUBBER WATER

Lab Sample ID: 140-18101-7

Date Collected: 10/16/19 15:05
Matrix: Water
Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.75**	**J H H3 B**	1.84	0.323	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoropentanoic acid (PFPeA)	**0.968**	**J H H3**	1.84	0.452	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorohexanoic acid (PFHxA)	**1.03**	**J H H3**	1.84	0.535	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroheptanoic acid (PFHpA)	**0.677**	**J H H3**	1.84	0.231	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanoic acid (PFOA)	**2.84**	**H H3**	1.84	0.784	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorononanoic acid (PFNA)	ND	H H3	1.84	0.249	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorodecanoic acid (PFDA)	ND	H H3	1.84	0.286	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	1.84	1.01	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.84	0.507	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.84	1.20	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.84	0.267	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.84	0.184	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.84	0.277	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	1.84	0.157	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.84	0.175	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	1.84	0.498	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.84	0.148	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.84	0.295	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.84	0.415	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.84	0.323	ng/L		02/03/20 05:19	02/05/20 07:51	1
NEtFOSA	ND	H H3	1.84	0.802	ng/L		02/03/20 05:19	02/05/20 07:51	1
NMeFOSA	ND	H H3	1.84	0.397	ng/L		02/03/20 05:19	02/05/20 07:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	18.4	2.86	ng/L		02/03/20 05:19	02/05/20 07:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	18.4	1.75	ng/L		02/03/20 05:19	02/05/20 07:51	1
NMeFOSE	ND	H H3	3.69	1.29	ng/L		02/03/20 05:19	02/05/20 07:51	1

Client Sample ID: SCRUBBER WATER

Lab Sample ID: 140-18101-7

Date Collected: 10/16/19 15:05

Matrix: Water

Date Received: 01/30/20 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSE	ND	H H3	1.84	0.784	ng/L		02/03/20 05:19	02/05/20 07:51	1
4:2 FTS	ND	H H3	18.4	4.80	ng/L		02/03/20 05:19	02/05/20 07:51	1
6:2 FTS	**4.04**	**J H H3**	18.4	1.84	ng/L		02/03/20 05:19	02/05/20 07:51	1
8:2 FTS	**3.40**	**J H H3**	18.4	1.84	ng/L		02/03/20 05:19	02/05/20 07:51	1
10:2 FTS	ND	H H3	1.84	0.175	ng/L		02/03/20 05:19	02/05/20 07:51	1
DONA	ND	H H3	1.84	0.166	ng/L		02/03/20 05:19	02/05/20 07:51	1
HFPO-DA (GenX)	ND	H H3	3.69	1.38	ng/L		02/03/20 05:19	02/05/20 07:51	1
F-53B Major	ND	H H3	1.84	0.221	ng/L		02/03/20 05:19	02/05/20 07:51	1
F-53B Minor	ND	H H3	1.84	0.295	ng/L		02/03/20 05:19	02/05/20 07:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*47*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C5 PFPeA	*71*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFHxA	*77*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFHpA	*82*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFOA	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C5 PFNA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFDA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFUnA	*76*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFDoA	*68*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFTeDA	*64*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C3 PFBS	*80*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
18O2 PFHxS	*82*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFOS	*80*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C8 FOSA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d5-NEtFOSAA	*63*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d-N-MeFOSA-M	*45*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d-N-EtFOSA-M	*38*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d7-N-MeFOSE-M	*32*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d9-N-EtFOSE-M	*30*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C3 HFPO-DA	*61*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*

Client Sample ID: FRESH WATER

Lab Sample ID: 140-18101-8

Date Collected: 10/16/19 15:20

Matrix: Water

Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.935**	**J H H3 B**	1.88	0.330	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoropentanoic acid (PFPeA)	**0.681**	**J H H3**	1.88	0.462	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorohexanoic acid (PFHxA)	**0.703**	**J H H3**	1.88	0.547	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroheptanoic acid (PFHpA)	**0.399**	**J H H3**	1.88	0.236	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanoic acid (PFOA)	**1.53**	**J H H3**	1.88	0.801	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorononanoic acid (PFNA)	ND	H H3	1.88	0.254	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorodecanoic acid (PFDA)	ND	H H3	1.88	0.292	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	1.88	1.04	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.88	0.518	ng/L		02/03/20 05:19	02/05/20 07:59	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: FRESH WATER
Date Collected: 10/16/19 15:20
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-8
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.88	1.23	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.88	0.273	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorobutanesulfonic acid (PFBS)	**0.250**	**J H H3**	1.88	0.188	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.88	0.283	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorohexanesulfonic acid (PFHxS)	**0.349**	**J H H3 B**	1.88	0.160	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.88	0.179	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	1.88	0.509	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.88	0.151	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.88	0.302	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.88	0.424	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanesulfonamide (FOSA)	**1.31**	**J H H3 B**	1.88	0.330	ng/L		02/03/20 05:19	02/05/20 07:59	1
NEtFOSA	ND	H H3	1.88	0.820	ng/L		02/03/20 05:19	02/05/20 07:59	1
NMeFOSA	ND	H H3	1.88	0.405	ng/L		02/03/20 05:19	02/05/20 07:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	18.8	2.92	ng/L		02/03/20 05:19	02/05/20 07:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	18.8	1.79	ng/L		02/03/20 05:19	02/05/20 07:59	1
NMeFOSE	ND	H H3	3.77	1.32	ng/L		02/03/20 05:19	02/05/20 07:59	1
NEtFOSE	ND	H H3	1.88	0.801	ng/L		02/03/20 05:19	02/05/20 07:59	1
4:2 FTS	ND	H H3	18.8	4.90	ng/L		02/03/20 05:19	02/05/20 07:59	1
6:2 FTS	ND	H H3	18.8	1.88	ng/L		02/03/20 05:19	02/05/20 07:59	1
8:2 FTS	ND	H H3	18.8	1.88	ng/L		02/03/20 05:19	02/05/20 07:59	1
10:2 FTS	ND	H H3	1.88	0.179	ng/L		02/03/20 05:19	02/05/20 07:59	1
DONA	ND	H H3	1.88	0.170	ng/L		02/03/20 05:19	02/05/20 07:59	1
HFPO-DA (GenX)	ND	H H3	3.77	1.41	ng/L		02/03/20 05:19	02/05/20 07:59	1
F-53B Major	ND	H H3	1.88	0.226	ng/L		02/03/20 05:19	02/05/20 07:59	1
F-53B Minor	ND	H H3	1.88	0.302	ng/L		02/03/20 05:19	02/05/20 07:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*75*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C5 PFPeA	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFHxA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFHpA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFOA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C5 PFNA	*97*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFDA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFUnA	*91*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFDoA	*86*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C3 PFBS	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
18O2 PFHxS	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFOS	*97*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C8 FOSA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d-N-MeFOSA-M	*64*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*

Client Sample ID: FRESH WATER

Lab Sample ID: 140-18101-8

Date Collected: 10/16/19 15:20
Matrix: Water
Date Received: 01/30/20 09:15

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d-N-EtFOSA-M	*56*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d7-N-MeFOSE-M	*43*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d9-N-EtFOSE-M	*39*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-4:2 FTS	*87*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-6:2 FTS	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C3 HFPO-DA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*

Client Sample ID: PRETREATED SOIL 1

Lab Sample ID: 140-18101-9

Date Collected: 10/11/19 14:30
Matrix: Solid
Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.120**	**J H H3 B**	0.182	0.0255	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoropentanoic acid (PFPeA)	**0.281**	**H H3**	0.182	0.0701	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorohexanoic acid (PFHxA)	**0.222**	**H H3**	0.182	0.0383	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroheptanoic acid (PFHpA)	**0.176**	**J H H3**	0.182	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanoic acid (PFOA)	**0.238**	**H H3**	0.182	0.0783	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorononanoic acid (PFNA)	**0.0797**	**J H H3**	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorodecanoic acid (PFDA)	**0.0250**	**J H H3**	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroundecanoic acid (PFUnA)	**0.0524**	**J H H3**	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.182	0.0610	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.182	0.0464	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.182	0.0492	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.182	0.0228	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoropentanesulfonic acid (PFPeS)	**0.0230**	**J H H3**	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorohexanesulfonic acid (PFHxS)	**0.331**	**H H3**	0.182	0.0282	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.182	0.0319	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanesulfonic acid (PFOS)	**1.48**	**H H3**	0.455	0.182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.182	0.0355	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.182	0.0546	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.182	0.0747	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NEtFOSA	ND	H H3	0.182	0.0219	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NMeFOSA	ND	H H3	0.182	0.0373	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.82	0.355	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.82	0.337	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NMeFOSE	**0.0778**	**J H H3**	0.182	0.0647	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NEtFOSE	ND	H H3	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
4:2 FTS	ND	H H3	1.82	0.337	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
6:2 FTS	ND	H H3	1.82	0.137	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
8:2 FTS	**0.506**	**J H H3**	1.82	0.228	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
10:2 FTS	**0.0636**	**J H H3**	0.182	0.0455	ug/Kg		02/03/20 11:18	02/11/20 00:32	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: PRETREATED SOIL 1
Date Collected: 10/11/19 14:30
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-9
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DONA	ND	H H3	0.182	0.0164	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
HFPO-DA (GenX)	ND	H H3	0.228	0.100	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
F-53B Major	ND	H H3	0.182	0.0246	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
F-53B Minor	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*82*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C5 PFPeA	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFHxA	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFHpA	*89*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFOA	*84*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C5 PFNA	*87*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFDA	*95*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFUnA	*102*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFDoA	*100*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFTeDA	*103*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C3 PFBS	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
18O2 PFHxS	*83*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFOS	*83*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C8 FOSA	*90*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d3-NMeFOSAA	*26*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d5-NEtFOSAA	*28*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d-N-MeFOSA-M	*66*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d-N-EtFOSA-M	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d7-N-MeFOSE-M	*13*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d9-N-EtFOSE-M	*13*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-4:2 FTS	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-6:2 FTS	*65*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-8:2 FTS	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: 3535

Analyte	RL	MDL	Units
10:2 FTS	2.00	0.190	ng/L
4:2 FTS	20.0	5.20	ng/L
6:2 FTS	20.0	2.00	ng/L
8:2 FTS	20.0	2.00	ng/L
DONA	2.00	0.180	ng/L
F-53B Major	2.00	0.240	ng/L
F-53B Minor	2.00	0.320	ng/L
HFPO-DA (GenX)	4.00	1.50	ng/L
NEtFOSA	2.00	0.870	ng/L
NEtFOSE	2.00	0.850	ng/L
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	1.90	ng/L
NMeFOSA	2.00	0.430	ng/L
NMeFOSE	4.00	1.40	ng/L
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	3.10	ng/L
Perfluorobutanesulfonic acid (PFBS)	2.00	0.200	ng/L
Perfluorobutanoic acid (PFBA)	2.00	0.350	ng/L
Perfluorodecanesulfonic acid (PFDS)	2.00	0.320	ng/L
Perfluorodecanoic acid (PFDA)	2.00	0.310	ng/L
Perfluorododecanesulfonic acid (PFDoS)	2.00	0.450	ng/L
Perfluorododecanoic acid (PFDoA)	2.00	0.550	ng/L
Perfluoroheptanesulfonic Acid (PFHpS)	2.00	0.190	ng/L
Perfluoroheptanoic acid (PFHpA)	2.00	0.250	ng/L
Perfluorohexanesulfonic acid (PFHxS)	2.00	0.170	ng/L
Perfluorohexanoic acid (PFHxA)	2.00	0.580	ng/L
Perfluorononanesulfonic acid (PFNS)	2.00	0.160	ng/L
Perfluorononanoic acid (PFNA)	2.00	0.270	ng/L
Perfluorooctanesulfonamide (FOSA)	2.00	0.350	ng/L
Perfluorooctanesulfonic acid (PFOS)	2.00	0.540	ng/L
Perfluorooctanoic acid (PFOA)	2.00	0.850	ng/L
Perfluoropentanesulfonic acid (PFPeS)	2.00	0.300	ng/L
Perfluoropentanoic acid (PFPeA)	2.00	0.490	ng/L
Perfluorotetradecanoic acid (PFTeA)	2.00	0.290	ng/L
Perfluorotridecanoic acid (PFTriA)	2.00	1.30	ng/L
Perfluoroundecanoic acid (PFUnA)	2.00	1.10	ng/L

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: SHAKE

Analyte	RL	MDL	Units
10:2 FTS	0.200	0.0500	ug/Kg
4:2 FTS	2.00	0.370	ug/Kg
6:2 FTS	2.00	0.150	ug/Kg
8:2 FTS	2.00	0.250	ug/Kg
DONA	0.200	0.0180	ug/Kg
F-53B Major	0.200	0.0270	ug/Kg
F-53B Minor	0.200	0.0220	ug/Kg
HFPO-DA (GenX)	0.250	0.110	ug/Kg
NEtFOSA	0.200	0.0240	ug/Kg
NEtFOSE	0.200	0.0360	ug/Kg
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	0.370	ug/Kg

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

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

Prep: SHAKE

Analyte	RL	MDL	Units
NMeFOSA	0.200	0.0410	ug/Kg
NMeFOSE	0.200	0.0710	ug/Kg
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	0.390	ug/Kg
Perfluorobutanesulfonic acid (PFBS)	0.200	0.0250	ug/Kg
Perfluorobutanoic acid (PFBA)	0.200	0.0280	ug/Kg
Perfluorodecanesulfonic acid (PFDS)	0.200	0.0390	ug/Kg
Perfluorodecanoic acid (PFDA)	0.200	0.0220	ug/Kg
Perfluorododecanesulfonic acid (PFDoS)	0.200	0.0600	ug/Kg
Perfluorododecanoic acid (PFDoA)	0.200	0.0670	ug/Kg
Perfluoroheptanesulfonic Acid (PFHpS)	0.200	0.0350	ug/Kg
Perfluoroheptanoic acid (PFHpA)	0.200	0.0290	ug/Kg
Perfluorohexanesulfonic acid (PFHxS)	0.200	0.0310	ug/Kg
Perfluorohexanoic acid (PFHxA)	0.200	0.0420	ug/Kg
Perfluorononanesulfonic acid (PFNS)	0.200	0.0200	ug/Kg
Perfluorononanoic acid (PFNA)	0.200	0.0360	ug/Kg
Perfluorooctanesulfonamide (FOSA)	0.200	0.0820	ug/Kg
Perfluorooctanesulfonic acid (PFOS)	0.500	0.200	ug/Kg
Perfluorooctanoic acid (PFOA)	0.200	0.0860	ug/Kg
Perfluoropentanesulfonic acid (PFPeS)	0.200	0.0200	ug/Kg
Perfluoropentanoic acid (PFPeA)	0.200	0.0770	ug/Kg
Perfluorotetradecanoic acid (PFTeA)	0.200	0.0540	ug/Kg
Perfluorotridecanoic acid (PFTriA)	0.200	0.0510	ug/Kg
Perfluoroundecanoic acid (PFUnA)	0.200	0.0360	ug/Kg

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-18101-1	STAKE 66	70	63	70	72	71	75	74	80
140-18101-1 MS	STAKE 66	62	59	65	68	65	68	70	76
140-18101-1 MSD	STAKE 66	68	61	68	71	69	72	76	77
140-18101-2	BAGHOUSE	65	59	67	70	69	69	74	77
140-18101-3	STAKE 67	65	63	66	71	70	68	71	76
140-18101-4	STAKE 68	67	64	71	76	73	74	73	81
140-18101-5	STAKE 69	72	67	72	80	72	76	80	80
140-18101-6	STAKE 70	83	78	87	92	91	94	93	101
140-18101-9	PRETREATED SOIL 1	82	75	81	89	84	87	95	102
LCS 320-354686/2-A	Lab Control Sample	79	75	79	86	83	82	83	94
MB 320-354686/1-A	Method Blank	68	63	68	75	72	76	74	78

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)
140-18101-1	STAKE 66	86	86	71	73	67	63	73	85
140-18101-1 MS	STAKE 66	78	78	63	67	66	62	70	76
140-18101-1 MSD	STAKE 66	87	85	70	72	67	66	72	78
140-18101-2	BAGHOUSE	79	75	63	65	60	65	63	66
140-18101-3	STAKE 67	77	82	65	64	63	69	69	72
140-18101-4	STAKE 68	86	89	70	73	71	73	67	76
140-18101-5	STAKE 69	84	86	72	75	72	74	74	80
140-18101-6	STAKE 70	98	106	84	88	82	87	75	81
140-18101-9	PRETREATED SOIL 1	100	103	81	83	83	90	26	28
LCS 320-354686/2-A	Lab Control Sample	98	98	79	81	75	79	87	88
MB 320-354686/1-A	Method Blank	81	81	69	70	68	70	70	71

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	I-MeFOSA (25-150)	N-EtFOSA (25-150)	NMFM (10-120)	NEFM (10-120)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	HFPODA (25-150)
140-18101-1	STAKE 66	57	56	12	13	70	68	73	60
140-18101-1 MS	STAKE 66	51	47	12	13	69	65	65	52
140-18101-1 MSD	STAKE 66	57	58	11	12	69	69	74	54
140-18101-2	BAGHOUSE	32	29	12	12	41	39	42	56
140-18101-3	STAKE 67	51	51	20	22	66	60	70	62
140-18101-4	STAKE 68	62	61	32	32	67	67	109	59
140-18101-5	STAKE 69	59	60	28	28	66	63	106	64
140-18101-6	STAKE 70	54	57	21	24	59	65	82	73
140-18101-9	PRETREATED SOIL 1	66	67	13	13	86	65	75	73
LCS 320-354686/2-A	Lab Control Sample	65	61	28	27	82	82	78	64
MB 320-354686/1-A	Method Blank	42	37	9 *	10	71	70	67	48

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
d-N-MeFOSA-M = d-N-MeFOSA-M
d-N-EtFOSA-M = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	47	71	77	82	84	83	81	76
140-18101-7 DU	SCRUBBER WATER	39	52	61	63	63	67	66	68
140-18101-8	FRESH WATER	75	84	93	96	96	97	98	91
LCS 320-354584/2-A	Lab Control Sample	103	95	98	101	100	98	103	100
LCSD 320-354584/3-A	Lab Control Sample Dup	99	92	95	98	100	94	96	92
MB 320-354584/1-A	Method Blank	98	92	93	94	98	95	103	93

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	3C3-PFBS	PFHxS	PFOS	PFOSA	-NMeFOSA	-NEtFOSA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	68	64	80	82	80	81	65	63
140-18101-7 DU	SCRUBBER WATER	66	59	69	67	73	68	50	52
140-18101-8	FRESH WATER	86	81	95	95	97	96	83	83
LCS 320-354584/2-A	Lab Control Sample	103	95	98	97	98	99	88	91
LCSD 320-354584/3-A	Lab Control Sample Dup	95	92	98	98	93	92	84	85
MB 320-354584/1-A	Method Blank	98	97	97	96	95	93	86	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d-N-MeFOSA-M	d-N-EtFOSA-M	NMFM	NEFM	M242FTS	M262FTS	M282FTS	HFPODA
Lab Sample ID	Client Sample ID	(20-150)	(20-150)	(10-120)	(10-120)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	45	38	32	30	90	92	90	61
140-18101-7 DU	SCRUBBER WATER	42	35	25	21	74	80	82	41
140-18101-8	FRESH WATER	64	56	43	39	87	84	86	81
LCS 320-354584/2-A	Lab Control Sample	65	49	34	26	86	88	84	76
LCSD 320-354584/3-A	Lab Control Sample Dup	63	46	29	26	79	88	87	91
MB 320-354584/1-A	Method Blank	65	50	32	27	83	81	83	105

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
d-N-MeFOSA-M = d-N-MeFOSA-M
d-N-EtFOSA-M = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-354584/1-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354584

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.9460	J	2.00	0.350	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoropentanoic acid (PFPeA)	ND		2.00	0.490	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorohexanoic acid (PFHxA)	ND		2.00	0.580	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.00	0.250	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanoic acid (PFOA)	ND		2.00	0.850	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorononanoic acid (PFNA)	ND		2.00	0.270	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorodecanoic acid (PFDA)	ND		2.00	0.310	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.00	1.10	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.00	0.550	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorotridecanoic acid (PFTriA)	ND		2.00	1.30	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.00	0.290	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.00	0.200	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.00	0.300	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.2956	J	2.00	0.170	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.00	0.190	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	0.540	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorononanesulfonic acid (PFNS)	ND		2.00	0.160	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.00	0.320	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.00	0.450	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanesulfonamide (FOSA)	0.5098	J	2.00	0.350	ng/L		02/03/20 05:19	02/05/20 07:27	1
NEtFOSA	ND		2.00	0.870	ng/L		02/03/20 05:19	02/05/20 07:27	1
NMeFOSA	ND		2.00	0.430	ng/L		02/03/20 05:19	02/05/20 07:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20.0	3.10	ng/L		02/03/20 05:19	02/05/20 07:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20.0	1.90	ng/L		02/03/20 05:19	02/05/20 07:27	1
NMeFOSE	ND		4.00	1.40	ng/L		02/03/20 05:19	02/05/20 07:27	1
NEtFOSE	ND		2.00	0.850	ng/L		02/03/20 05:19	02/05/20 07:27	1
4:2 FTS	ND		20.0	5.20	ng/L		02/03/20 05:19	02/05/20 07:27	1
6:2 FTS	ND		20.0	2.00	ng/L		02/03/20 05:19	02/05/20 07:27	1
8:2 FTS	ND		20.0	2.00	ng/L		02/03/20 05:19	02/05/20 07:27	1
10:2 FTS	0.1944	J	2.00	0.190	ng/L		02/03/20 05:19	02/05/20 07:27	1
DONA	ND		2.00	0.180	ng/L		02/03/20 05:19	02/05/20 07:27	1
HFPO-DA (GenX)	ND		4.00	1.50	ng/L		02/03/20 05:19	02/05/20 07:27	1
F-53B Major	ND		2.00	0.240	ng/L		02/03/20 05:19	02/05/20 07:27	1
F-53B Minor	ND		2.00	0.320	ng/L		02/03/20 05:19	02/05/20 07:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C5 PFPeA	*92*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFHxA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C4 PFHpA	*94*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C4 PFOA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C5 PFNA	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFDA	*103*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFUnA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFDoA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*

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

Lab Sample ID: MB 320-354584/1-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	97		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C3 PFBS	97		25 - 150	02/03/20 05:19	02/05/20 07:27	1
18O2 PFHxS	96		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C4 PFOS	95		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C8 FOSA	93		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d3-NMeFOSAA	86		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d5-NEtFOSAA	90		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d-N-MeFOSA-M	65		20 - 150	02/03/20 05:19	02/05/20 07:27	1
d-N-EtFOSA-M	50		20 - 150	02/03/20 05:19	02/05/20 07:27	1
d7-N-MeFOSE-M	32		10 - 120	02/03/20 05:19	02/05/20 07:27	1
d9-N-EtFOSE-M	27		10 - 120	02/03/20 05:19	02/05/20 07:27	1
M2-4:2 FTS	83		25 - 150	02/03/20 05:19	02/05/20 07:27	1
M2-6:2 FTS	81		25 - 150	02/03/20 05:19	02/05/20 07:27	1
M2-8:2 FTS	83		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C3 HFPO-DA	105		25 - 150	02/03/20 05:19	02/05/20 07:27	1

Lab Sample ID: LCS 320-354584/2-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	38.61		ng/L		97	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	40.60		ng/L		102	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	38.15		ng/L		95	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	38.10		ng/L		95	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	37.03		ng/L		93	70 - 130
Perfluorononanoic acid (PFNA)	40.0	40.78		ng/L		102	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	35.35		ng/L		88	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	34.46		ng/L		86	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	38.93		ng/L		97	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.75		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	39.89		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	34.96		ng/L		99	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.42		ng/L		100	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.66		ng/L		92	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.70		ng/L		102	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	36.04		ng/L		97	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	37.44		ng/L		97	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.31		ng/L		97	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	38.7	40.37		ng/L		104	67 - 127

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

Lab Sample ID: LCS 320-354584/2-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	38.55		ng/L		96	73 - 133
NMeFOSA	40.0	41.23		ng/L		103	67 - 154
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.61		ng/L		92	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.12		ng/L		90	76 - 136
NMeFOSE	40.0	36.09		ng/L		90	70 - 130
NEtFOSE	40.0	41.89		ng/L		105	71 - 131
4:2 FTS	37.4	35.64		ng/L		95	79 - 139
6:2 FTS	37.9	35.88		ng/L		95	59 - 175
8:2 FTS	38.3	37.28		ng/L		97	75 - 135
10:2 FTS	38.6	36.34		ng/L		94	64 - 142
DONA	37.7	38.81		ng/L		103	79 - 139
HFPO-DA (GenX)	40.0	51.56		ng/L		129	51 - 173
F-53B Major	37.3	36.06		ng/L		97	75 - 135
F-53B Minor	37.7	37.13		ng/L		99	54 - 114

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*103*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*101*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*100*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C3 PFBS	*98*		*25 - 150*
18O2 PFHxS	*97*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*
13C8 FOSA	*99*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*91*		*25 - 150*
d-N-MeFOSA-M	*65*		*20 - 150*
d-N-EtFOSA-M	*49*		*20 - 150*
d7-N-MeFOSE-M	*34*		*10 - 120*
d9-N-EtFOSE-M	*26*		*10 - 120*
M2-4:2 FTS	*86*		*25 - 150*
M2-6:2 FTS	*88*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	38.07		ng/L		95	76 - 136	1	30

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

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)			40.0	39.81		ng/L		100	71 - 131	2	30
Perfluorohexanoic acid (PFHxA)			40.0	38.68		ng/L		97	73 - 133	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	37.44		ng/L		94	72 - 132	2	30
Perfluorooctanoic acid (PFOA)			40.0	35.68		ng/L		89	70 - 130	4	30
Perfluorononanoic acid (PFNA)			40.0	39.35		ng/L		98	75 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	36.80		ng/L		92	76 - 136	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	36.44		ng/L		91	68 - 128	6	30
Perfluorododecanoic acid (PFDoA)			40.0	40.53		ng/L		101	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.57		ng/L		99	71 - 131	5	30
Perfluorotetradecanoic acid (PFTeA)			40.0	39.05		ng/L		98	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.20		ng/L		97	67 - 127	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.10		ng/L		96	66 - 126	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	32.84		ng/L		90	59 - 119	2	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	39.78		ng/L		104	76 - 136	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.86		ng/L		97	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)			38.4	41.32		ng/L		108	75 - 135	10	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.12		ng/L		104	71 - 131	7	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	40.36		ng/L		104	67 - 127	0	30
Perfluorooctanesulfonamide (FOSA)			40.0	40.08		ng/L		100	73 - 133	4	30
NMeFOSA			40.0	41.61		ng/L		104	67 - 154	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.12		ng/L		98	76 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	36.88		ng/L		92	76 - 136	2	30
NMeFOSE			40.0	41.81		ng/L		105	70 - 130	15	30
NEtFOSE			40.0	37.83		ng/L		95	71 - 131	10	30
4:2 FTS			37.4	37.26		ng/L		100	79 - 139	4	30
6:2 FTS			37.9	31.92		ng/L		84	59 - 175	12	30
8:2 FTS			38.3	37.09		ng/L		97	75 - 135	1	30
10:2 FTS			38.6	34.95		ng/L		91	64 - 142	4	30
DONA			37.7	40.40		ng/L		107	79 - 139	4	30
HFPO-DA (GenX)			40.0	45.58		ng/L		114	51 - 173	12	30
F-53B Major			37.3	38.39		ng/L		103	75 - 135	6	30
F-53B Minor			37.7	37.71		ng/L		100	54 - 114	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*

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

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFHpA	98		25 - 150
13C4 PFOA	100		25 - 150
13C5 PFNA	94		25 - 150
13C2 PFDA	96		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	92		25 - 150
13C3 PFBS	98		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	93		25 - 150
13C8 FOSA	92		25 - 150
d3-NMeFOSAA	84		25 - 150
d5-NEtFOSAA	85		25 - 150
d-N-MeFOSA-M	63		20 - 150
d-N-EtFOSA-M	46		20 - 150
d7-N-MeFOSE-M	29		10 - 120
d9-N-EtFOSE-M	26		10 - 120
M2-4:2 FTS	79		25 - 150
M2-6:2 FTS	88		25 - 150
M2-8:2 FTS	87		25 - 150
13C3 HFPO-DA	91		25 - 150

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	1.75	J H H3 B		2.677	F5	ng/L				42	30
Perfluoropentanoic acid (PFPeA)	0.968	J H H3		1.200	J	ng/L				21	30
Perfluorohexanoic acid (PFHxA)	1.03	J H H3		1.367	J	ng/L				28	30
Perfluoroheptanoic acid (PFHpA)	0.677	J H H3		0.9587	J F5	ng/L				34	30
Perfluorooctanoic acid (PFOA)	2.84	H H3		3.798		ng/L				29	30
Perfluorononanoic acid (PFNA)	ND	H H3		ND		ng/L				NC	30
Perfluorodecanoic acid (PFDA)	ND	H H3		ND		ng/L				NC	30
Perfluoroundecanoic acid (PFUnA)	ND	H H3		ND		ng/L				NC	30
Perfluorododecanoic acid (PFDoA)	ND	H H3		ND		ng/L				NC	30
Perfluorotridecanoic acid (PFTriA)	ND	H H3		ND		ng/L				NC	30
Perfluorotetradecanoic acid (PFTeA)	ND	H H3		ND		ng/L				NC	30
Perfluorobutanesulfonic acid (PFBS)	ND	H H3		ND		ng/L				NC	30
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3		ND		ng/L				NC	30
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3		0.5493	J	ng/L				NC	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3		ND		ng/L				NC	30

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

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	ND	H H3		ND		ng/L				NC	30
Perfluorononanesulfonic acid (PFNS)	ND	H H3		ND		ng/L				NC	30
Perfluorodecanesulfonic acid (PFDS)	ND	H H3		ND		ng/L				NC	30
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3		ND		ng/L				NC	30
Perfluorooctanesulfonamide (FOSA)	ND	H H3		1.086	J	ng/L				NC	30
NEtFOSA	ND	H H3		ND		ng/L				NC	30
NMeFOSA	ND	H H3		ND		ng/L				NC	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3		ND		ng/L				NC	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3		ND		ng/L				NC	30
NMeFOSE	ND	H H3		ND		ng/L				NC	30
NEtFOSE	ND	H H3		ND		ng/L				NC	30
4:2 FTS	ND	H H3		ND		ng/L				NC	30
6:2 FTS	4.04	J H H3		4.955	J	ng/L				20	30
8:2 FTS	3.40	J H H3		3.209	J	ng/L				6	30
10:2 FTS	ND	H H3		ND		ng/L				NC	30
DONA	ND	H H3		ND		ng/L				NC	30
HFPO-DA (GenX)	ND	H H3		ND		ng/L				NC	30
F-53B Major	ND	H H3		ND		ng/L				NC	30
F-53B Minor	ND	H H3		ND		ng/L				NC	30

Isotope Dilution	*DU %Recovery*	*DU Qualifier*	*Limits*
13C4 PFBA	*39*		*25 - 150*
13C5 PFPeA	*52*		*25 - 150*
13C2 PFHxA	*61*		*25 - 150*
13C4 PFHpA	*63*		*25 - 150*
13C4 PFOA	*63*		*25 - 150*
13C5 PFNA	*67*		*25 - 150*
13C2 PFDA	*66*		*25 - 150*
13C2 PFUnA	*68*		*25 - 150*
13C2 PFDoA	*66*		*25 - 150*
13C2 PFTeDA	*59*		*25 - 150*
13C3 PFBS	*69*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*73*		*25 - 150*
13C8 FOSA	*68*		*25 - 150*
d3-NMeFOSAA	*50*		*25 - 150*
d5-NEtFOSAA	*52*		*25 - 150*
d-N-MeFOSA-M	*42*		*20 - 150*
d-N-EtFOSA-M	*35*		*20 - 150*
d7-N-MeFOSE-M	*25*		*10 - 120*
d9-N-EtFOSE-M	*21*		*10 - 120*
M2-4:2 FTS	*74*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*

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

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	DU %Recovery	DU Qualifier	Limits
M2-8:2 FTS	*82*		*25 - 150*
13C3 HFPO-DA	*41*		*25 - 150*

Lab Sample ID: MB 320-354686/1-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.05710	J	0.200	0.0280	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoropentanoic acid (PFPeA)	ND		0.200	0.0770	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorohexanoic acid (PFHxA)	ND		0.200	0.0420	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroheptanoic acid (PFHpA)	ND		0.200	0.0290	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanoic acid (PFOA)	ND		0.200	0.0860	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorononanoic acid (PFNA)	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorodecanoic acid (PFDA)	ND		0.200	0.0220	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroundecanoic acid (PFUnA)	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorododecanoic acid (PFDoA)	ND		0.200	0.0670	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorotridecanoic acid (PFTriA)	ND		0.200	0.0510	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.200	0.0540	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.200	0.0250	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.200	0.0200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.200	0.0310	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.200	0.0350	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.500	0.200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorononanesulfonic acid (PFNS)	ND		0.200	0.0200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.200	0.0390	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.200	0.0600	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanesulfonamide (FOSA)	ND		0.200	0.0820	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NEtFOSA	ND		0.200	0.0240	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NMeFOSA	ND		0.200	0.0410	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	0.390	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	0.370	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NMeFOSE	ND		0.200	0.0710	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NEtFOSE	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
4:2 FTS	ND		2.00	0.370	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
6:2 FTS	ND		2.00	0.150	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
8:2 FTS	ND		2.00	0.250	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
10:2 FTS	ND		0.200	0.0500	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
DONA	ND		0.200	0.0180	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
HFPO-DA (GenX)	ND		0.250	0.110	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
F-53B Major	ND		0.200	0.0270	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
F-53B Minor	ND		0.200	0.0220	ug/Kg		02/03/20 11:18	02/10/20 08:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*68*		*25 - 150*	*02/03/20 11:18*	*02/10/20 08:32*	*1*

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

Lab Sample ID: MB 320-354686/1-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	63		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFHxA	68		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFHpA	75		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFOA	72		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C5 PFNA	76		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFDA	74		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFUnA	78		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFDoA	81		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFTeDA	81		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C3 PFBS	69		25 - 150	02/03/20 11:18	02/10/20 08:32	1
18O2 PFHxS	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFOS	68		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C8 FOSA	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d3-NMeFOSAA	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d5-NEtFOSAA	71		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d-N-MeFOSA-M	42		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d-N-EtFOSA-M	37		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d7-N-MeFOSE-M	9	*	10 - 120	02/03/20 11:18	02/10/20 08:32	1
d9-N-EtFOSE-M	10		10 - 120	02/03/20 11:18	02/10/20 08:32	1
M2-4:2 FTS	71		25 - 150	02/03/20 11:18	02/10/20 08:32	1
M2-6:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
M2-8:2 FTS	67		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C3 HFPO-DA	48		25 - 150	02/03/20 11:18	02/10/20 08:32	1

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.00	2.073		ug/Kg		104	76 - 136
Perfluoropentanoic acid (PFPeA)	2.00	2.032		ug/Kg		102	69 - 129
Perfluorohexanoic acid (PFHxA)	2.00	1.988		ug/Kg		99	71 - 131
Perfluoroheptanoic acid (PFHpA)	2.00	1.940		ug/Kg		97	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	1.874		ug/Kg		94	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.047		ug/Kg		102	73 - 133
Perfluorodecanoic acid (PFDA)	2.00	1.963		ug/Kg		98	72 - 132
Perfluoroundecanoic acid (PFUnA)	2.00	1.862		ug/Kg		93	66 - 126
Perfluorododecanoic acid (PFDoA)	2.00	1.975		ug/Kg		99	71 - 131
Perfluorotridecanoic acid (PFTriA)	2.00	2.069		ug/Kg		103	71 - 131
Perfluorotetradecanoic acid (PFTeA)	2.00	1.859		ug/Kg		93	67 - 127
Perfluorobutanesulfonic acid (PFBS)	1.77	1.691		ug/Kg		96	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.845		ug/Kg		98	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.727		ug/Kg		95	62 - 122

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

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.994		ug/Kg		105	76 - 136
Perfluorooctanesulfonic acid (PFOS)	1.86	1.960		ug/Kg		106	68 - 141
Perfluorononanesulfonic acid (PFNS)	1.92	1.847		ug/Kg		96	72 - 132
Perfluorodecanesulfonic acid (PFDS)	1.93	2.182		ug/Kg		113	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	1.94	2.117		ug/Kg		109	70 - 130
Perfluorooctanesulfonamide (FOSA)	2.00	1.866		ug/Kg		93	77 - 137
NMeFOSA	2.00	2.000		ug/Kg		100	63 - 148
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	1.858	J	ug/Kg		93	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.811	J	ug/Kg		91	72 - 132
NMeFOSE	2.00	1.919		ug/Kg		96	43 - 153
NEtFOSE	2.00	1.854		ug/Kg		93	44 - 155
4:2 FTS	1.87	1.612	J	ug/Kg		86	68 - 143
6:2 FTS	1.90	1.666	J	ug/Kg		88	73 - 139
8:2 FTS	1.92	1.788	J	ug/Kg		93	75 - 135
10:2 FTS	1.93	2.217		ug/Kg		115	69 - 145
DONA	1.88	2.091		ug/Kg		111	79 - 139
HFPO-DA (GenX)	2.00	2.233		ug/Kg		112	53 - 158
F-53B Major	1.86	1.874		ug/Kg		101	74 - 134
F-53B Minor	1.88	2.007		ug/Kg		107	66 - 136

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*79*		*25 - 150*
13C5 PFPeA	*75*		*25 - 150*
13C2 PFHxA	*79*		*25 - 150*
13C4 PFHpA	*86*		*25 - 150*
13C4 PFOA	*83*		*25 - 150*
13C5 PFNA	*82*		*25 - 150*
13C2 PFDA	*83*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*98*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
13C3 PFBS	*79*		*25 - 150*
18O2 PFHxS	*81*		*25 - 150*
13C4 PFOS	*75*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*65*		*25 - 150*
d-N-EtFOSA-M	*61*		*25 - 150*
d7-N-MeFOSE-M	*28*		*10 - 120*
d9-N-EtFOSE-M	*27*		*10 - 120*
M2-4:2 FTS	*82*		*25 - 150*
M2-6:2 FTS	*82*		*25 - 150*

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

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
M2-8:2 FTS	*78*		*25 - 150*
13C3 HFPO-DA	*64*		*25 - 150*

Lab Sample ID: 140-18101-1 MS
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.0537	J H H3 B	1.84	1.775		ug/Kg		94	76 - 136
Perfluoropentanoic acid (PFPeA)	ND	H H3	1.84	1.833		ug/Kg		100	69 - 129
Perfluorohexanoic acid (PFHxA)	0.0752	J H H3	1.84	1.820		ug/Kg		95	71 - 131
Perfluoroheptanoic acid (PFHpA)	ND	H H3	1.84	1.886		ug/Kg		103	71 - 131
Perfluorooctanoic acid (PFOA)	ND	H H3	1.84	1.721		ug/Kg		94	72 - 132
Perfluorononanoic acid (PFNA)	ND	H H3	1.84	1.783		ug/Kg		97	73 - 133
Perfluorodecanoic acid (PFDA)	0.0257	J H H3	1.84	1.854		ug/Kg		99	72 - 132
Perfluoroundecanoic acid (PFUnA)	0.0702	J H H3	1.84	1.826		ug/Kg		96	66 - 126
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.84	1.844		ug/Kg		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.84	1.805		ug/Kg		98	71 - 131
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.84	1.787		ug/Kg		97	67 - 127
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.63	1.513		ug/Kg		91	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.72	1.697		ug/Kg		98	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	0.0582	J H H3	1.67	1.493		ug/Kg		86	62 - 122
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.75	1.676		ug/Kg		96	76 - 136
Perfluorooctanesulfonic acid (PFOS)	0.440	J H H3	1.71	1.827		ug/Kg		81	68 - 141
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.76	1.552		ug/Kg		88	72 - 132
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.77	1.780		ug/Kg		100	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.78	1.735		ug/Kg		98	70 - 130
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.84	1.783		ug/Kg		97	77 - 137
NMeFOSA	ND	H H3	1.84	1.764		ug/Kg		96	63 - 148
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.84	1.751	J	ug/Kg		95	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.84	1.739	J	ug/Kg		95	72 - 132
NMeFOSE	ND	H H3	1.84	1.832		ug/Kg		100	43 - 153
NEtFOSE	ND	H H3	1.84	1.740		ug/Kg		95	44 - 155
4:2 FTS	ND	H H3	1.72	1.591	J	ug/Kg		93	68 - 143
6:2 FTS	ND	H H3	1.74	1.514	J	ug/Kg		87	73 - 139
8:2 FTS	ND	H H3	1.76	1.502	J	ug/Kg		85	75 - 135
10:2 FTS	ND	H H3	1.77	2.267		ug/Kg		128	69 - 145
DONA	ND	H H3	1.73	1.727		ug/Kg		100	79 - 139

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

Lab Sample ID: 140-18101-1 MS
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA (GenX)	ND	H H3	1.84	2.155		ug/Kg		117	53 - 158
F-53B Major	ND	H H3	1.71	1.786		ug/Kg		104	74 - 134
F-53B Minor	ND	H H3	1.73	1.653		ug/Kg		95	66 - 136

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*62*		*25 - 150*
13C5 PFPeA	*59*		*25 - 150*
13C2 PFHxA	*65*		*25 - 150*
13C4 PFHpA	*68*		*25 - 150*
13C4 PFOA	*65*		*25 - 150*
13C5 PFNA	*68*		*25 - 150*
13C2 PFDA	*70*		*25 - 150*
13C2 PFUnA	*76*		*25 - 150*
13C2 PFDoA	*78*		*25 - 150*
13C2 PFTeDA	*78*		*25 - 150*
13C3 PFBS	*63*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*66*		*25 - 150*
13C8 FOSA	*62*		*25 - 150*
d3-NMeFOSAA	*70*		*25 - 150*
d5-NEtFOSAA	*76*		*25 - 150*
d-N-MeFOSA-M	*51*		*25 - 150*
d-N-EtFOSA-M	*47*		*25 - 150*
d7-N-MeFOSE-M	*12*		*10 - 120*
d9-N-EtFOSE-M	*13*		*10 - 120*
M2-4:2 FTS	*69*		*25 - 150*
M2-6:2 FTS	*65*		*25 - 150*
M2-8:2 FTS	*65*		*25 - 150*
13C3 HFPO-DA	*52*		*25 - 150*

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.0537	J H H3 B	1.96	1.931		ug/Kg		96	76 - 136	8	30
Perfluoropentanoic acid (PFPeA)	ND	H H3	1.96	2.100		ug/Kg		107	69 - 129	14	30
Perfluorohexanoic acid (PFHxA)	0.0752	J H H3	1.96	2.016		ug/Kg		99	71 - 131	10	30
Perfluoroheptanoic acid (PFHpA)	ND	H H3	1.96	2.068		ug/Kg		105	71 - 131	9	30
Perfluorooctanoic acid (PFOA)	ND	H H3	1.96	1.887		ug/Kg		96	72 - 132	9	30
Perfluorononanoic acid (PFNA)	ND	H H3	1.96	2.040		ug/Kg		104	73 - 133	13	30
Perfluorodecanoic acid (PFDA)	0.0257	J H H3	1.96	1.969		ug/Kg		99	72 - 132	6	30
Perfluoroundecanoic acid (PFUnA)	0.0702	J H H3	1.96	2.053		ug/Kg		101	66 - 126	12	30
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.96	2.113		ug/Kg		108	71 - 131	14	30
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.96	2.022		ug/Kg		103	71 - 131	11	30
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.96	2.082		ug/Kg		106	67 - 127	15	30

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

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.74	1.717		ug/Kg		97	69 - 129	13	30
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.84	1.911		ug/Kg		104	66 - 126	12	30
Perfluorohexanesulfonic acid (PFHxS)	0.0582	J H H3	1.79	1.758		ug/Kg		95	62 - 122	16	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.87	1.936		ug/Kg		104	76 - 136	14	30
Perfluorooctanesulfonic acid (PFOS)	0.440	J H H3	1.82	2.114		ug/Kg		92	68 - 141	15	30
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.89	1.987		ug/Kg		105	72 - 132	25	30
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.89	2.115		ug/Kg		112	71 - 131	17	30
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.90	2.005		ug/Kg		105	70 - 130	14	30
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.96	1.999		ug/Kg		102	77 - 137	11	30
NMeFOSA	ND	H H3	1.96	2.024		ug/Kg		103	63 - 148	14	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	2.087		ug/Kg		106	72 - 132	18	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	1.970		ug/Kg		100	72 - 132	12	30
NMeFOSE	ND	H H3	1.96	2.140		ug/Kg		109	43 - 153	15	30
NEtFOSE	ND	H H3	1.96	1.822		ug/Kg		93	44 - 155	5	30
4:2 FTS	ND	H H3	1.83	1.773	J	ug/Kg		97	68 - 143	11	30
6:2 FTS	ND	H H3	1.86	1.696	J	ug/Kg		91	73 - 139	11	30
8:2 FTS	ND	H H3	1.88	1.805	J	ug/Kg		96	75 - 135	18	30
10:2 FTS	ND	H H3	1.89	2.165		ug/Kg		114	69 - 145	5	30
DONA	ND	H H3	1.85	1.966		ug/Kg		106	79 - 139	13	30
HFPO-DA (GenX)	ND	H H3	1.96	2.462		ug/Kg		125	53 - 158	13	30
F-53B Major	ND	H H3	1.83	2.128		ug/Kg		116	74 - 134	17	30
F-53B Minor	ND	H H3	1.85	2.031		ug/Kg		110	66 - 136	21	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*68*		*25 - 150*
13C5 PFPeA	*61*		*25 - 150*
13C2 PFHxA	*68*		*25 - 150*
13C4 PFHpA	*71*		*25 - 150*
13C4 PFOA	*69*		*25 - 150*
13C5 PFNA	*72*		*25 - 150*
13C2 PFDA	*76*		*25 - 150*
13C2 PFUnA	*77*		*25 - 150*
13C2 PFDoA	*87*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
13C3 PFBS	*70*		*25 - 150*
18O2 PFHxS	*72*		*25 - 150*
13C4 PFOS	*67*		*25 - 150*
13C8 FOSA	*66*		*25 - 150*
d3-NMeFOSAA	*72*		*25 - 150*
d5-NEtFOSAA	*78*		*25 - 150*

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

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
d-N-MeFOSA-M	57		25 - 150
d-N-EtFOSA-M	58		25 - 150
d7-N-MeFOSE-M	11		10 - 120
d9-N-EtFOSE-M	12		10 - 120
M2-4:2 FTS	69		25 - 150
M2-6:2 FTS	69		25 - 150
M2-8:2 FTS	74		25 - 150
13C3 HFPO-DA	54		25 - 150

LCMS

Prep Batch: 354584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-7	SCRUBBER WATER	Total/NA	Water	3535	
140-18101-8	FRESH WATER	Total/NA	Water	3535	
MB 320-354584/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-354584/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-354584/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
140-18101-7 DU	SCRUBBER WATER	Total/NA	Water	3535	

Prep Batch: 354686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	SHAKE	
140-18101-2	BAGHOUSE	Total/NA	Solid	SHAKE	
140-18101-3	STAKE 67	Total/NA	Solid	SHAKE	
140-18101-4	STAKE 68	Total/NA	Solid	SHAKE	
140-18101-5	STAKE 69	Total/NA	Solid	SHAKE	
140-18101-6	STAKE 70	Total/NA	Solid	SHAKE	
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	SHAKE	
MB 320-354686/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-354686/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
140-18101-1 MS	STAKE 66	Total/NA	Solid	SHAKE	
140-18101-1 MSD	STAKE 66	Total/NA	Solid	SHAKE	

Analysis Batch: 355234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-7	SCRUBBER WATER	Total/NA	Water	537 (modified)	354584
140-18101-8	FRESH WATER	Total/NA	Water	537 (modified)	354584
MB 320-354584/1-A	Method Blank	Total/NA	Water	537 (modified)	354584
LCS 320-354584/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	354584
LCSD 320-354584/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	354584
140-18101-7 DU	SCRUBBER WATER	Total/NA	Water	537 (modified)	354584

Analysis Batch: 356091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-354686/1-A	Method Blank	Total/NA	Solid	537 (modified)	354686
LCS 320-354686/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	354686

Analysis Batch: 356418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	537 (modified)	354686
140-18101-2	BAGHOUSE	Total/NA	Solid	537 (modified)	354686
140-18101-3	STAKE 67	Total/NA	Solid	537 (modified)	354686
140-18101-4	STAKE 68	Total/NA	Solid	537 (modified)	354686
140-18101-5	STAKE 69	Total/NA	Solid	537 (modified)	354686
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	537 (modified)	354686
140-18101-1 MS	STAKE 66	Total/NA	Solid	537 (modified)	354686
140-18101-1 MSD	STAKE 66	Total/NA	Solid	537 (modified)	354686

Analysis Batch: 356735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-6	STAKE 70	Total/NA	Solid	537 (modified)	354686

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

General Chemistry

Analysis Batch: 354660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	D 2216	
140-18101-2	BAGHOUSE	Total/NA	Solid	D 2216	
140-18101-3	STAKE 67	Total/NA	Solid	D 2216	
140-18101-4	STAKE 68	Total/NA	Solid	D 2216	
140-18101-5	STAKE 69	Total/NA	Solid	D 2216	
140-18101-6	STAKE 70	Total/NA	Solid	D 2216	
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	D 2216	
140-18101-1 DU	STAKE 66	Total/NA	Solid	D 2216	

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.22 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:12	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: BAGHOUSE
Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.34 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:42	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 67
Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.11 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:52	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 68
Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.50 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:02	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 69
Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.11 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:12	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 70
Date Collected: 10/16/19 14:25
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.85 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356735	02/12/20 02:52	JY1	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: SCRUBBER WATER
Date Collected: 10/16/19 15:05
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:51	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: FRESH WATER
Date Collected: 10/16/19 15:20
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.3 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:59	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: PRETREATED SOIL 1
Date Collected: 10/11/19 14:30
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.49 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:32	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-354584/1-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:27	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-354686/1-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356091	02/10/20 08:32	RS1	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-354584/2-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:35	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-354686/2-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356091	02/10/20 08:42	RS1	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 320-354584/3-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:43	RS1	TAL SAC
	Instrument ID: A8_N									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 MS
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.44 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:22	D1R	TAL SAC
	Instrument ID: A9									

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.09 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:32	D1R	TAL SAC
	Instrument ID: A9									

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 DU
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: SCRUBBER WATER
Date Collected: 10/16/19 15:05
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-7 DU
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.6 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 10:57	RS1	TAL SAC
	Instrument ID: A8_N									

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20 *
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-20 *
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20 *
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18101-1	STAKE 66	Solid	10/16/19 13:10	01/30/20 09:15	
140-18101-2	BAGHOUSE	Solid	10/16/19 13:40	01/30/20 09:15	
140-18101-3	STAKE 67	Solid	10/16/19 13:45	01/30/20 09:15	
140-18101-4	STAKE 68	Solid	10/16/19 13:55	01/30/20 09:15	
140-18101-5	STAKE 69	Solid	10/16/19 14:10	01/30/20 09:15	
140-18101-6	STAKE 70	Solid	10/16/19 14:25	01/30/20 09:15	
140-18101-7	SCRUBBER WATER	Water	10/16/19 15:05	01/30/20 09:15	
140-18101-8	FRESH WATER	Water	10/16/19 15:20	01/30/20 09:15	
140-18101-9	PRETREATED SOIL 1	Solid	10/11/19 14:30	01/30/20 09:15	

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

ATT: Ken Krebs

140-18101 Chain of Custody

ARES
P.O. Box 83050
Fairbanks, Alaska99708
Phone: 907.374.3226
Fax: 907.374.2319

Chain of Custody Report

Client: Alaska Resources and Environmental Services

Report To: Lyle Gresehover
Address: ARES
P.O. Box 83050
Email: lyle@ak-res.com
Phone: 907.374.3226 Fax: 907.374.3219

Project Name: EPA OIT/NRC PFAS test
NPDL Number:
Sampled By: Mark Carpenter

Location: Moose Creek, Alaska incineration plant OIT/NRC
EPA PFAS Test

Laboratory Name:
Address:
Phone:

P.O. Number:

Turnaround Request
In Business Days

Organic & Inorganic Analyses: 15 | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

Specify Other:
Report Tier Levels:

	Sample Identification	Sampling Date/ Time		Preservative: NA	NA	NA	NA	NA	NA	NA	Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
				Requested Analyses										
1														
2													NO CUSTODY SEALS	
3													RECEIVED AT RT 8.6/CT 8.6°C	
*	Stake 66	10/16/19	1310	Containers	#2567, #2575						S	1	BXD 1-30-20	
	Baghouse	10/16/19	1340	"	#2600, #2599						S	1	1 COOLER VPS#	
	Stake 67	10/16/19	1345	"	#2576, #2583						S	1	1ZA5E7620197881606 NDA	
	Stake 68	10/16/19	1355	"	#2584, #2586						S	1		
	Stake 69	10/16/19	1410	"	#2589, #2593						S	1		
	Stake 70	10/16/19	1425	"	#2594, #2588						S	1		
5	~~Paint used in stack~~	~~10/16/19~~	~~1320~~								O	1		
6	~~Untreated Soil~~	~~10/16/19~~	~~1445~~								S	2		
7	Scrubber Water	10/16/19	1505	As IS							S	2		
8	Fresh Water	10/16/19	1520	As IS							W	2		
9		10/16/19												
10		10/16/19												

Released By: Mark A. Carpenter
Print Name: Mark A. Carpenter Firm: ARES Date: 10/17/19 Time: 1100

Received By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: 22 Oct 2019 Time:

Released By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: Time:

Received By: Bryan Damerin
Print Name: BRYAN DAMERIN Firm: ETA-KNIK Date: 1-30-20 Time: 09:15

Additional Remarks:

Temp:

Page 1 of 1

COC REV 02/2008

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

ARES
P.O. Box 83050
Fairbanks, Alaska99708
Phone: 907.374.3226
Fax: 907.374.2319

Att: Ken Krebs

Chain of Custody Report

Client: Alaska Resources and Environmental Services

Report To: Lyle Gresehover
Address: ARES
P.O. Box 83050
Email: lyle@ak-res.com
Phone: 907.374.3226 Fax: 907.374.3219

Project Name: EPA OIT/NRC PFAS test
NPDL Number:
Sampled By: Mark Carpenter

Location: Moose Creek, Alaska incineration plant OIT/NRC
EPA PFAS Test

Laboratory Name:
Address:
Phone:

P.O. Number:

Turnaround Request
In Business Days

Organic & Inorganic Analyses

15	7	5	4	3	2	1	<1

Petroleum Hydrocarbon Analyses

5	4	3	2	1	<1

Specify Other:
Report Tier Levels:

Preservative: NA | NA | NA | NA | NA | NA | NA

Requested Analyses

	Sample Identification	Sampling Date/ Time		Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
1	Pretreated soil 1	10/11/19	1410	S	1		
2	Pretreated soil 1	10/11/19	1420	S	1		
3	Pretreated soil 1	10/11/19	1425	S	1		
	Pretreated soil 1	10/11/19	1430	S	1		
	~~Fresh Water 1~~	~~10/11/19~~	~~1445~~	W	4		
	~~Fresh Water 2~~	~~10/11/19~~	~~1455~~	W	4		
9							
10							

Combined into "Pre 1, 2, 3, 4" Container #2564 & #2574

Released By: Mark A Carpenter
Print Name: Mark A. Carpenter Firm: ARES Date: 10/17/19 Time: 1100

Received By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: 22 Oct 2019 Time:

Released By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: Time:

Received By: Bryan Vanover
Print Name: BRYAN DAMERON Firm: ETA KNX Date: 1-31-20 Time: 09:15

Additional Remarks:

Temp:

COC REV 02/2008

Loc: 140
18101

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	✓			☐ Containers, Broken	4
2. Were ambient air containers received intact?			✓	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA	7, SCRUBBER WATER, LISTED ON COC AS SOIL, SHOULD BE WATER
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : S668 Correction factor: 0.0		✓		☑ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	14, NO RELINQUISHED DATE OR TIME
5. Were all of the sample containers received intact?	✓			☐ Containers, Broken	15
6. Were samples received in appropriate containers?	✓			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ COC & Samples Do Not Match ☑ COC Incorrect/Incomplete ☐ COC Not Received	
8. Were all of the samples listed on the COC received?	✓			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	✓			☐ COC; No Date/Time; Client Contacted	
10. Was the sampler identified on the COC?	✓			☐ Sampler Not Listed on COC	**Labeling Verified by:** **Date:**
11. Is the client and project name/# identified?	✓			☐ COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	✓			☐ COC No tests on COC	**pH test strip lot number:**
13. Is the matrix of the samples noted?	✓			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)		✓		☑ COC Incorrect/Incomplete	
15. Were samples received within holding time?		✓		☑ Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative	
17. Were VOA samples received without headspace?			✓	☐ Headspace (VOA only)	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ Residual Chlorine	
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info	

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 1-30-20

QA026R32.doc, 062719

2/18/2020

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-7070.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-18101-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 2/13/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: EPA OIT/NRC PFAS Test	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Shake_Bath_14D PFAS, Extended List (36 Analytes)	PFC_IDA/3535_PFC PFAS, Extended List (36 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
STAKE 66 (140-18101-1)	10/16/19	13:10 Alaskan		Solid			X		2	
STAKE 66 (140-18101-1MS)	10/16/19	13:10 Alaskan	MS	Solid			X		1	
STAKE 66 (140-18101-1MSD)	10/16/19	13:10 Alaskan	MSD	Solid			X		1	
BAGHOUSE (140-18101-2)	10/16/19	13:40 Alaskan		Solid			X		2	
STAKE 67 (140-18101-3)	10/16/19	13:45 Alaskan		Solid			X		2	
STAKE 68 (140-18101-4)	10/16/19	13:55 Alaskan		Solid			X		2	
STAKE 69 (140-18101-5)	10/16/19	14:10 Alaskan		Solid			X		2	
STAKE 70 (140-18101-6)	10/16/19	14:25 Alaskan		Solid			X		2	
SCRUBBER WATER (140-18101-7)	10/16/19	15:05 Alaskan		Water				X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	1-30-20 12:45	ETA Knx	Juan Guzman	1131/20 - 9:00	ETA-SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.7

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-7070.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-18101-1
Address: 880 Riverside Parkway,	Due Date Requested: 2/13/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: EPA OIT/NRC PFAS Test	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Shake_Bath_14D PFAS, Extended List (36 Analytes)	PFC_IDA/3535_PFC PFAS, Extended List (36 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
SCRUBBER WATER (140-18101-7MS)	10/16/19	15:05 Alaskan	MS	Water				X	1	
SCRUBBER WATER (140-18101-7MSD)	10/16/19	15:05 Alaskan	MSD	Water				X	1	
FRESH WATER (140-18101-8)	10/16/19	15:20 Alaskan		Water				X	2	
PRETREATED SOIL 1 (140-18101-9)	10/11/19	14:30 Alaskan		Solid			X		2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the labo

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10.30.20 12:45	ETA KNX	Juan Guzman	10/31/20 - 9:00	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.7

Ver: 01/16/2019

eurofins | Environment Testing TestAmerica

Sacramento Sample Receiving Notes

140-18101 Field Sheet

Job: _____

Tracking # : 4395-7838-7620

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

GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

Therm. ID: AK-12 Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 1.7 °C Corrected: 1.7 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: JG Date: 1/31/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

Non-conformance	Yes	No	NA
NCM Filed?	☐	☐	☑

Initials: JG Date: 1/31/20

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

W13-A

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-18101-1

Login Number: 18101
List Number: 2
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento
List Creation: 01/31/20 12:46 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix E
Quality Assurance Data

Scott™

RATA CLASS

Guaranteed +/- 1% Accuracy

500 Weaver Park Rd, Longmont, CO 80501 Phone: 303-651-3094 Fax: 303-772-7673

CERTIFICATE OF ACCURACY : EPA Protocol Gas

Customer:
AIR LIQUIDE AMERICA LP
AIR LIQUIDE ALASKA-3
6415 Arctic Blvd
Anchorage, AK 99518-1533
US

Assay Laboratory - PGVP Vendor ID: A42016
Air Liquide America Specialty Gases LLC
500 Weaver Park Rd
Longmont, CO 80501

Lot No: 455781
P.O. No.: 48322
Folio #: 14%O2/4% CO2
Sales Order # : 3523367

ANALYTICAL INFORMATION

Gas Type : CO2,O2,BALN

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G -1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: CC153263
Cylinder Pressure: 2000 PSIG

Certification Date: 20Jun2016

Expiration Date: 21Jun2024
Lot No: 455781

Component Name	Concentration (Mole)	Accuracy (Absolute / Relative)
CARBON DIOXIDE	4.10 %	0.03 % / 0.7 %
OXYGEN	14.1 %	0.1 % / 0.7 %
NITROGEN	BALANCE	

TRACEABILITY

Analytical Traceability

Reference Standard

Component	Concentration	Uncertainty	Cylinder	Type	Exp. Date
CARBON DIOXIDE	4.9540 %	0.025 %	K014222	NTRM 2000	25Nov2017
OXYGEN	9.9300 %	0.07 %	ALM065031	NTRM 2658	15May2018

ANALYTICAL METHOD

1st Analysis: 06/20/2016

COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
CARBON DIOXIDE	MKS 2030 929062	Fourier Transform Infrared	05/26/2016	4.10 %

1st Analysis: 06/21/2016

COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
OXYGEN	Siemens Oxymat 6 W5-591	Paramagnetic	06/13/2016	14.1 %

APPROVED BY: Robin Reed DATE: 20Jun2016

ROBIN REED – LAB TECHNICIAN

AIR LIQUIDE™

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
11711 S. Alameda Street
Los Angeles, CA 90059
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0138	Reference Number:	48-401556124-1
Cylinder Number:	CC415571	Cylinder Volume:	150.9 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32019	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jul 29, 2019

Expiration Date: Jul 29, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.998 %	G1	+/- 0.7% NIST Traceable	07/29/2019
OXYGEN	10.00 %	10.02 %	G1	+/- 0.7% NIST Traceable	07/29/2019
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08010611	K005428	13.94 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 30, 2024
NTRM	98051001	SG9168397	12.05 % OXYGEN/NITROGEN	+/- 0.7%	Dec 14, 2023

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS 6E CO2	NDIR	Jul 04, 2019
SIEMENS OXYMAT 6	PARAMAGNETIC	Jul 29, 2019

Triad Data Available Upon Request

G. Vargas
Approved for Release

Linearity - 10/12/2019

TIME	O2	CO2
10/13/2019 12:43	10.1247	9.95204
10/13/2019 12:43	10.124	9.9597
10/13/2019 12:44	10.1247	9.95733
10/13/2019 12:44	10.124	9.95931
10/13/2019 12:45	10.124	9.92915
10/13/2019 12:45	10.1186	9.57948
10/13/2019 12:46	14.2974	3.97597
10/13/2019 12:46	14.3089	3.97068
10/13/2019 12:47	14.3129	3.96713
10/13/2019 12:47	14.3095	3.96571
10/13/2019 12:48	14.3129	3.96168
10/13/2019 12:48	14.3136	3.96145
10/13/2019 12:49	14.3122	3.96468
10/13/2019 12:49	14.3095	3.94921
10/13/2019 12:50	0.249447	-0.03189
10/13/2019 12:50	0.026236	-0.04531
10/13/2019 12:51	0.024275	-0.04752
10/13/2019 12:51	0.016364	-0.04886
10/13/2019 12:52	0.017243	-0.04941
10/13/2019 12:52	0.012645	-0.05044
10/13/2019 12:53	9.20E-03	-0.05107
10/13/2019 12:53	0.011563	-0.03955
10/13/2019 12:54	0.011901	0.208622
10/13/2019 12:54	0.01988	0.144528
10/13/2019 12:55	9.58432	0.249431
10/13/2019 12:55	20.6328	0.317393
10/13/2019 12:56	20.5706	0.326391
10/13/2019 12:56	20.5611	0.325286

EPA/NRC Meter Box T-couple

M1

T-in	ASTM	T-out	ASTM
57°	57°	58	58
84°	84°	89	90

M-2

55	55	57	57
93	93	86	86

10/3/19

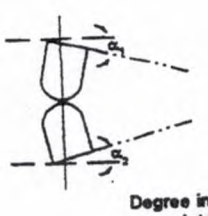
NRC Cyclonic Flow check

10/13/19

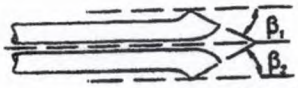
	angel
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	6
12	0

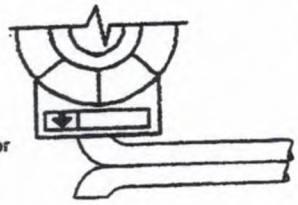
EPA / NRC

CALIBRATION DATA SHEET 2
Type S Pitot Tube Inspection

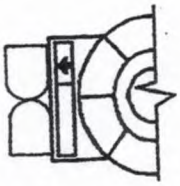


Degree indicating level position for determining α_1 and α_2.

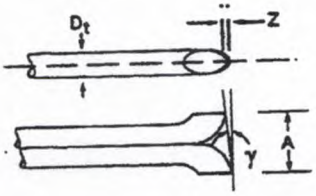


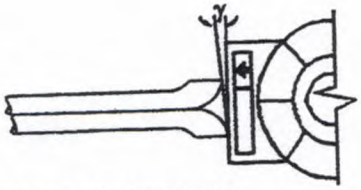


Degree indicating level position for determining β_1 and β_2.



Degree indicating level position for determining Θ.





Degree indicating level position for detemining γ then calculate Z.

Level and Perpendicular?	YES
Obstruction?	NO
Damaged?	NO
α_1 $(-10° \le \alpha_1 \le +10°)$	+1°
α_2 $(-10° \le \alpha_2 \le +10°)$	0°
β_1 $(-5° \le \beta_1 \le +5°)$	0°
β_2 $(-5° \le \beta_2 \le +5°)$	0°
γ	0
Θ	0
$z = A \tan \gamma$ $(\le 0.125")$	✓
$w = A \tan \Theta$ $(\le 0.03125")$	✓
D_t $(3/16" \le D_t \le 3/8")$	3/8
A	.945
$A/2D_t$ $(1.05 \le P_A/D_t \le 1.5)$	1.26

T-couple	ASTM
65 °F	65 °F
138	137
305	305

QA/QC Check

Completeness ✓ Legibility ✓ Accuracy ✓ Specifications ✓ Reasonableness ✓

Certification

I certify that the Type S pitot tube/probe ID# M5 4-4 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor C_p of 0.84.

Certified by: _____ _____

Personnel (Signature/Date) Team Leader (Signature/Date)

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility
Stack Testing for PFAS – Field QC Samples

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Project Identification:	**Moose Creek Facility Testing**
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	**Holding Time Requirements:**	**Preservation Requirements:**
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field BLANKS & Proof & Trip

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6601 QC M0010 Filter BT #1 (Combine with *A-6602*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6602 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #1 (Combine with *A-6601*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6603 QC M0010 XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6604 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #1 (Combine with *A-6603*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6605 QC M0010 Impingers 1,2 & 3 Condensate BT #1	QC	10/15/19	Blank Train #1	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6606 QC M0010 Impinger Glassware MeOH Rinse BT #1	QC	10/15/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6607 QC M0010 Breakthrough XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6608 QC M0010 Filter BT #2 (Combine with *A-6609*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6609 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #2 (Combine with *A-6608*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6610 QC M0010 XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6611 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #2 (Combine with *A-6610*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 QC M0010 Impingers 1,2 & 3 Condensate BT #2	QC	10/15/19	Blank Train #2	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6613 QC M0010 Impinger Glassware MeOH Rinse BT #2	QC	10/15/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 QC M0010 Breakthrough XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 QC M0010 XAD-2 Resin Tube TB $ D2356 Included	QC	10/13/19	Trip Blank	XAD-2 Resin Tube	**XAD-2 Resin Tube Trip Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/14/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6617 QC M0010 DI Water RB	QC	10/13/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6618 QC M0010 MeOH with 5% NH_4OH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19
Accepted By:	W.W. Hall	AST	10/17/19 11:
Relinquished By:	W.W. Hall	AST	10/18/19
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
D-2357 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/16/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2358 QC M0010 DI Water RB	QC	10/16/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2359 QC M0010 $MeCl_2$ RB	QC	NC	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methylene Chloride ($MeCl_2$) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2360 QC M0010 MeOH with 5% NH_4OH RB	QC	10/16/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Calill	ETA	10/17/19 12:00
Accepted By:	[signature]	AST	10/17/19 12:?
Relinquished By:	[signature]	AST	10/18/19 ?
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility – North Pole, Alaska
Emissions Test by Modified Method 18 QC Field Samples – Task .60

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Project Identification:	**Emissions Test on Scrubber Outlet**
Client Name:	Alaska Source Air
Client Contact:	Mr. Bill Hudson Office: (907) 562-2880
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Target Analytes (Target Analyte List):	**Holding Time Requirements:**	**Preservation Requirements:**
Fluoroether E-1, HFPO, Carbonyl Di-fluoride & Perfluoroacetyl fluoride (PAF)	14 Days to Analysis	Cool, 4°C
HFPO-DA & HFPO-DAF	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C
pH	Analyze as soon as reasonably possible	None
Total Fluorine	30 Days to Analysis	None

Field Sample No./Sample Coding ID	**Run No.**	**Sample Collection Date**	**Project QC Require-ments**	**Sample Bottle/ Container**	**Sample Type/Analysis**	**Analytical Specifications**
O-2764 QC Scrubber Outlet Impinger #1 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2765 QC Scrubber Outlet Impinger #2 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2766 QC Scrubber Outlet Impinger #3 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2767 QC Scrubber Outlet Impinger #4 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2768 QC Scrubber Outlet Impinger #5 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2769 QC Scrubber Outlet Impinger #6 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2770 QC Scrubber Outlet Impinger #7 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2771 QC Scrubber Outlet Impinger #8 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2772 QC Scrubber Outlet Impinger #1 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2773 QC Scrubber Outlet Impinger #2 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2774 QC Scrubber Outlet Impinger #3 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2775 QC Scrubber Outlet Impinger #4 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2776 QC Scrubber Outlet Impinger #5 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2777 QC Scrubber Outlet Impinger #6 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2778 QC Scrubber Outlet Impinger #7 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2779 QC Scrubber Outlet Impinger #8 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2780 QC DIV Ambient Air/WGS Inlet MeOH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Methanol Reagent Blank** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2781 QC DIV Ambient Air/WGS Inlet MeOH TB	QC	10/13/19	Trip Blank	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Methanol Trip Blank** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19 11:40
Accepted By:	W.W.	AST	10/17/19 11:40
Relinquished By:	Will Hahn	AST	10/18/19 11:30
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Scrubber By-Pass Testing for PFAS – Task .50

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Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

NOT SCRUBBER By pass - Regular Condition

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6605 R1 M0010 Filter (Combine with *A-6606*)	~~1~~	VOID Set-UP as #5 RUN NOT completed		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6606 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *A-6605*)	1			125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6607 R1 M0010 XAD-2 Resin Tube	1			XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6608 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6607*)	1	Void		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6609 R1 M0010 Impingers 1,2 & 3 Condensate	1			1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6610 R1 M0010 Impinger Glassware MeOH Rinse	1			250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6611 R1 M0010 Breakthrough XAD-2 Resin Tube	1			XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 R2 M0010 Filter (Combine with *A-6613*)	~~2~~ ~~8~~ 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6613 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6612*)	~~2~~ ~~5~~ 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 R2 M0010 XAD-2 Resin Tube	~~2~~ ~~4~~ ~~6~~ 5	10/16/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6614*)	~~2~~ ~~4~~ ~~6~~ 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 R2 M0010 Impingers 1,2 & 3 Condensate	~~2~~ ~~4~~ ~~6~~ 5	10/16/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6617 R2 M0010 Impinger Glassware MeOH Rinse	~~2~~ ~~4~~ ~~6~~ 5	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6618 R2 M0010 Breakthrough XAD-2 Resin Tube	~~2~~ ~~4~~ ~~6~~ 5	10/16/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6619 R3 M0010 Filter (Combine with *A-6620*)	~~4~~ ~~5~~ 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6620 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6619*)	~~3~~ ~~5~~ 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6621 R3 M0010 XAD-2 Resin Tube	~~3~~ ~~5~~ 6	10/17/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6622 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6621*	~~3~~ ~~5~~ 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6623 R3 M0010 Impingers 1,2 & 3 Condensate	~~3~~ ~~5~~ 6	10/17/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6624 R3 M0010 Impinger Glassware MeOH Rinse	~~3~~ ~~5~~ 6	10/17/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6625 R3 M0010 Breakthrough XAD-2 Resin Tube	~~3~~ 8 6	10/17/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Colvill	ETA	10/17/19 11:40
Accepted By:	[signature]	AST	10/17/19 11:4[illegible]
Relinquished By:	[signature]	AST	10/18/ 11:3[illegible]
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Stack Testing for PFAS

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Project Identification:	**Moose Creek Facility Testing**
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	**Holding Time Requirements:**	**Preservation Requirements:**
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1305 R1 M0010 Filter (Combine with *E-1306*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1306 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-1305*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1307 R1 M0010 XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1308 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1307*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1309 R1 M0010 Impingers 1,2 & 3 Condensate	1	10/13/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1310 R1 M0010 Impinger Glassware MeOH Rinse	1	10/13/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1311 R1 M0010 Breakthrough XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1312 R2 M0010 Filter (Combine with *E-1313*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1313 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1312*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1314 R2 M0010 XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1315 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1314*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1316 R2 M0010 Impingers 1,2 & 3 Condensate	2	10/14/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1317 R2 M0010 Impinger Glassware MeOH Rinse	2	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1318 R2 M0010 Breakthrough XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1319 R3 M0010 Filter (Combine with *E-1320*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1320 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1319*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1321 R3 M0010 XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1322 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1321*	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1323 R3 M0010 Impingers 1,2 & 3 Condensate	3	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1324 R3 M0010 Impinger Glassware MeOH Rinse	3	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1325 R3 M0010 Breakthrough XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1326 R4 M0010 ~~Ambient Air~~ Filter (Combine with *E-1327*) Regular RUN Condition NOT Ambient Air	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1327 R4 M0010 ~~Ambient Air~~ Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1326*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1328 R4 M0010 ~~Ambient Air~~ XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1329 R4 M0010 ~~Ambient Air~~ BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1328)*	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1330 R4 M0010 ~~Ambient Air~~ Impingers 1,2 & 3 Condensate	4	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1331 R4 M0010 ~~Ambient Air~~ Impinger Glassware MeOH Rinse	4	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1332 R4 M0010 ~~Ambient Air~~ Breakthrough XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

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Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Gehl	ETA	10/17/19 11:32
Accepted By:	W.M. Hen	AST	10/17/19 11:32
Relinquished By:	W.M. Hen	AST	10/18/19 11:2
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility – North Pole, Alaska
Emissions Test by Modified Method 18 – Task .60

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Project Identification:	Emissions Test on Scrubber Outlet
Client Name:	Alaska Source Air
Client Contact:	Mr. Bill Hudson Office: (907) 562-2880
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Target Analytes (Target Analyte List):	Holding Time Requirements:	Preservation Requirements:
Fluoroether E-1, HFPO, Carbonyl Di-fluoride & Perfluoroacetyl fluoride (PAF)	14 Days to Analysis	Cool, 4°C
HFPO-DA & HFPO-DAF	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C
pH	Analyze as soon as reasonably possible	None
Total Fluorine	30 Days to Analysis	None

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2964 R1 MM18 Scrubber Outlet Impinger #1 #1 50mL @ start Per EPA	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2965 R1 MM18 Scrubber Outlet Impinger #2	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2966 R1 MM18 Scrubber Outlet Impinger #3	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2967 R1 MM18 Scrubber Outlet Impinger #4	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2968 R1 MM18 Scrubber Outlet Impinger #5	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2969 R1 MM18 Scrubber Outlet Impinger #6	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2970 R1 MM18 Scrubber Outlet Impinger #7	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2971 R1 MM18 Scrubber Outlet Impinger #8	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2972 R2 MM18 Scrubber Outlet Impinger #1 Sand @ start	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2973 R2 MM18 Scrubber Outlet Impinger #2	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2974 R2 MM18 Scrubber Outlet Impinger #3	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2975 R2 MM18 Scrubber Outlet Impinger #4	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2976 R2 MM18 Scrubber Outlet Impinger #5	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2977 R2 MM18 Scrubber Outlet Impinger #6	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Requirements	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2978 R2 MM18 Scrubber Outlet Impinger #7	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2979 R2 MM18 Scrubber Outlet Impinger #8	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2980 R3 MM18 Scrubber Outlet Impinger #1 50ml @ start	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2981 R3 MM18 Scrubber Outlet Impinger #2	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2982 R3 MM18 Scrubber Outlet Impinger #3	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2983 R3 MM18 Scrubber Outlet Impinger #4	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2984 R3 MM18 Scrubber Outlet Impinger #5	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2985 R3 MM18 Scrubber Outlet Impinger #6	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2986 R3 MM18 Scrubber Outlet Impinger #7	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2987 R3 MM18 Scrubber Outlet Impinger #8	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2988 R4 MM18 Ambient Air Impinger #1	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2989 R4 MM18 Ambient Air Impinger #2	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2990 R4 MM18 Ambient Air Impinger #3	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2991 R4 MM18 Ambient Air Impinger #4	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2992 R4 MM18 Ambient Air Impinger #5	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2993 R4 MM18 Ambient Air Impinger #6	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2994 R4 MM18 Ambient Air Impinger #7	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2995 R4 MM18 Ambient Air Impinger #8	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	
(3) Record any apparent sample loss/breakage.	
(4) Record any unidentified samples transported with this shipment of samples:	
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19/ 11:[illegible]
Accepted By:	[signature]	AST	10/17/19 11:42
Relinquished By:	[signature]	AST	10/18/19 1[illegible]
Accepted By:			
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Appendix F
Project Participants

Project Participant	Role
Bill Hudson	AST Project Manager
Chase Aikey	AST Technician
Sarah Clift	Technical Writer
Mark Sanford	NRC over-all Project Test Manager
Navarone Copley	NRC on-site Technician
Doug Cahill	Test America On-site personnel
Billy Anderson	Test America Project Manager
Paul McGuire	NRC Contract Consultant
Jeff Ryan	US EPA Test Manager

Appendix G
Project Correspondence

Test Plan
Environmental Protection Agency
National Response Company
Moose Creek Facility
PFAS Incineration Test

Prepared for:

U.S. Environmental Protection Agency
Office for Research and Development
National Risk Management Research Laboratory
Air and Energy Management Division
Stationary Source Branch
109 T.W. Alexander Drive
Mail Drop E305-01
Research Triangle Park, NC 27711

Prepared by:

Alaska Source Testing, LLC.
520 W 58th Unit A
Anchorage, AK 99518

October 8, 2019

1 Introduction

The U.S. EPA has comisioned Alaska Source Testing LLC and Eurofins TestAmerica Knoxville to quantify Polyfluro compounds (PFC) in the exhaust off a soil remediation unit owned by National Response Corporation Alaska, LLC (NRC). The facility has been approved to remediate PFC contaminated soils by the Alaska Department of Enviromental Conservation.

NRC purchased Organic Incineration Technology Incorporated (OIT) Moose Creek Facility (MCF) in April of 2019. In 2019 the MCF secured the approvals necessary to thermally remediate contaminated soil containing Per and Polyfluoroalkyl Substances (PFAS). PFAS have many classes. Key classes of concern are perfluoroalkyl carboxylic acids (PFCAs) such as PFOA, and perfluoroalkyl sulfonic acids (PFSAs) such as PFOS. A full-scale test trial was completed in May 2018 that demonstrated the MCF could successfully reduce PFAS in the soil with only trace amounts being emitted from the exhaust stack. In May of 2019 a second test was performed to demonstrate compliance with the newly revised air permit.

At this time, there are no approved finalized U.S. EPA test methods for measuring poly-fluoro compounds (PFC) in the exhaust of the soil remediation unit. There are approved laboratory procedures for measuring PFC in water and solid samples.

Mr. Bill Hudson, AST President, will be the on-site Project Manager for the source test and will be assisted by AST technician Chase Aikey and Doug Cahill of Test America. Jeff Ryan of the U.S. EPA will be the on-site U.S.EPA test manager. Mark Sanford will be the on-site project manager for NRC. NRC is responsible for safe access to the sample locations and appropriate power to run the test train. Billy Anderson is the Test America project manager.

PFAS and PFOA concentrations will be measured using three different field test methods as follows:

Method for Determining HFPO_DA and Other Method 537 PFAS compound Emissions in Stack Gas Modified Method 0010 (MM-5) Sampling Train;

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas; and

Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters.

Additionally, USEPA Methods 1-5 will be used to measure stack velocity, oxygen and carbon dioxide content, moisture content and to determine iso-kinetic sampling.

2 Source Description

NRC's Moose Creek Facility is located 24 miles southeast of Fairbanks, Alaska and is situated in the Tanana River valley, one mile from Eielson Air Force Base at 3520 Old Richardson Highway, North Pole, Alaska.

The Thermal Treatment System's primary components are:

- Rotary Combustion Kiln
- Air Mixing Section
- Secondary Combustion Chamber
- Cooling (Quench) Tower
- Two Bag Houses
- Induction Fan
- Wet Scrubber
- Emission Stack

A packed tower wet scrubber is installed to control Hydrofluoric Acid (HF) emissions. The thermal system is controlled by a fully automated computer control system. The kiln is operating under negative pressure, minimizing the possibility of gases escaping from the system. Processing begins with the injection of the waste material by a 16" diameter auger. Once in the kiln, the contaminated material is exposed to temperatures of 1200 - 1500ºF. The gas vapors and particulate are drawn from the kiln in a counter current direction. The gases then enter the Air Mixing and Secondary Combustion Chamber and are exposed to temperatures from 1600 - 2000ºF, where oxidation occurs. There is limited data that identifies approximately 1800ºF as resulting in the successful destruction of PFAS compounds. An operating range of 1600 to 2000ºF was used during the 2018 test burn trial and the resulting data did not indicate a notable change in the remediation results over that range. NRC will optimize facility operations at approximately 1800ºF on an hourly average with the acknowledgment that some temperature variation is necessary for normal operations. As additional information regarding appropriate temperatures to achieve thermal destruction of PFAS at the Moose Creek Facility is developed, the facility operating temperature will be adjusted accordingly.

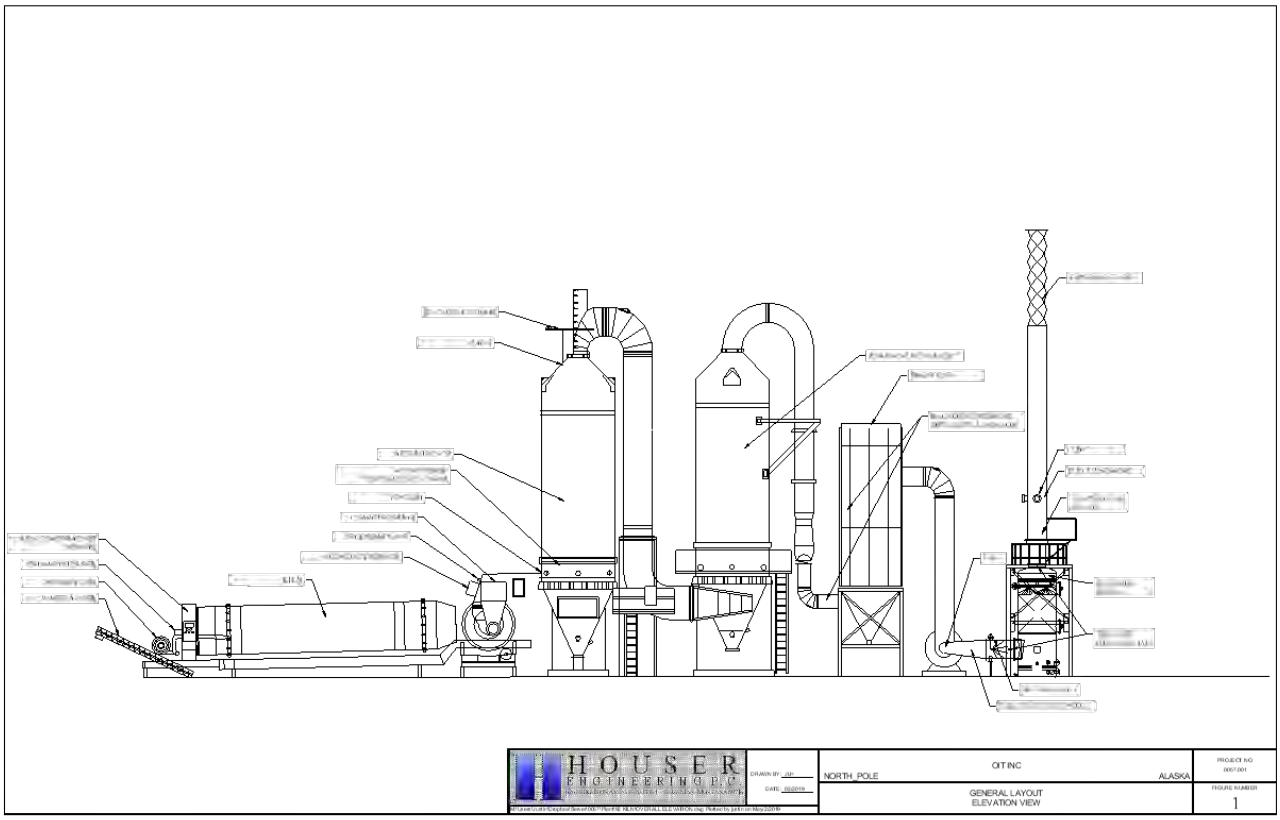
The superheated gases and airborne particulates then enter the Cooling/Quench Tower, where the gases and particulates are exposed to an atomized spray of water. Thus reducing particulate temperature from approximately 1800 to 350º F. The cooled particulate matter is removed from the air stream while moving through the baghouse. Exhaust gasses then enter a quench duct where they are saturated and further cooled before entering the scrubber. The saturated exhaust gas then flows up through the packing where it is exposed to a caustic solution that removes HF and then finally exhausts through a new 30-inch diameter stack positioned on top of the new scrubber.

Please see Figure 2-1 for a schematic of the unit processes.

Sample access will be gained via platform through two new sample ports on the stack. The four-inch sample ports have a nipple length of four inches. The sample ports are positioned in compliance with EPA Reference Method 1.

Operational parameters to be measured or recorded during the source test are listed in Section 3.5

Figure 2-1 Unit Processes



3 Test Description

The overall test series will consist of two different facility configurations; exhaust gas exiting through the scrubber and exhaust gas by-passing the scrubber. The scrubber testing will be performed first and time allowing the facility in by-pass mode second. When the facility is in by-pass a different stack will be installed. As previously stated PFAS will be measured using three different types of sample train. Six MM5 four -hour runs will be performed when the facility is in scrubber mode. Three two-hour MM18 runs will be performed simultaneously with the PFAS runs and three two- hour SUMMA canister runs will be performed simultaneously with the PFAS runs. Three four- hour PFAS runs will be performed on the facility in by-pass mode. Moisture content and velocity will be measured in the exhaust stack using USEPA Reference Methods 4 and 2. O_2 and CO_2 concentrations will be measured using USEPA Method 3A. The incinerator is expected to be operating at 3.5 tons per hour. OIT only burns On-Spec used oil blend during normal operations. Therefore, only On-Spec oil will be burned during the source testing.

3.1 Test Objectives

To further the science of testing for PFC in stack exhaust by quantifying the following list of analytes;

Analyte Description	
Perfluorohexanoic acid (PFHxA)	Perfluorobutanoic acid (PFBA)
Perfluoroheptanoic acid (PFHpA)	Perfluoropentanoic acid (PFPeA)
Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)
Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnA)
Perfluorododecanoic acid (PFDoA)	Perfluorotridecanoic acid (PFTriA)
Perfluorotetradecanoic acid (PFTeA)	Perfluorobutanesulfonic acid (PFBS)
Perfluorohexanesulfonic acid (PFHxS)	Perfluoro-n-hexadecanoic acid (PFHxDA)
Perfluorooctanesulfonic acid (PFOS)	Perfluoro-n-octadecanoic acid (PFODA)
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	
Perfluoroheptanesulfonic Acid (PFHpS)	Perfluorodecanesulfonic acid (PFDS)
Perfluorooctanesulfonamide (FOSA)	Perfluoropentanesulfonic acid (PFPeS)
Perfluorononanesulfonic acid (PFNS)	Total PFOA and PFOS
4:2 FTS	6:2 FTS
8:2 FTS	10:2 FTS
Perfluorododecanesulfonic acid (PFDoS)	

3.2 Test Methods

The emission-testing program will be performed in accordance with USEPA Reference Methods as prescribed in 40 *CFR* 60, Appendix A. The specific methods are listed below.

- Method 1 Sample and Velocity Traverses for Stationary Sources
- Method 2 Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
- Method 3A Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)
- Method 4 Determination of Moisture content in stack gases
- Method 5 Iso-kinetic variation

Testing will also be done in accordance with the following methods that are still in development stage:

Method for Determining HFPO_DA and Other Method 537 PFAS compound Emissions in Stack Gas Modified Method 0010 (MM-5) Sampling Train

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas

Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters

3.3 Description of Field Procedures

The on-site testing is tentatively scheduled to take five days. All testing is PFAS related.

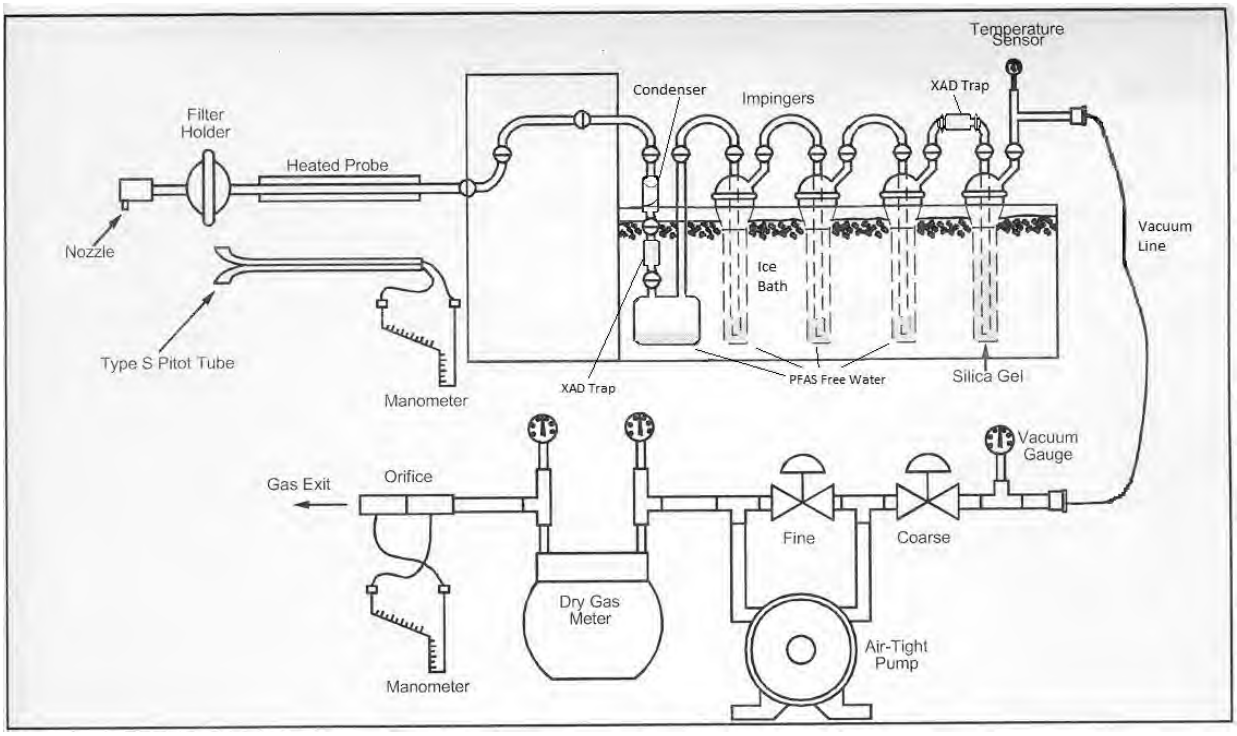
Method 0010 (MM-5)

The PFAS testing will consist of six individual four-hour sample runs while the scrubber is in use and three four-hour runs while the scrubber is by-passed. A minimum of 110 SCF of sample volume will be extracted from the stack. Prior to the testing, preliminary stack measurements will be collected for temperature, velocity and cyclonic flow. These preliminary measurements are necessary to setup for isokinetic sample nomograph and to assess sample conditions. The sample train will be leak tested prior to and immediately following each sample run. The temperature of the ice bath will be monitored. It is important that ice water circulation through the coil condenser and the XAD traps water jacket be as cold as reasonably possible. Upon completion of the final leak check, the sample train will be sealed at the stack location and transported to a clean area.

A clean area will be set up in the NRC on-site office. Lab tables will be covered with DI water and methanol rinsed aluminum foil, shiny side up. Test America is providing pre-labeled HDPE sample containers. The sample train will be disassembled. All sample materials will be recovered including the impinger contents, filter, XAD traps, and sample rinses. Immediately upon arrival the liquid contents will be weighed in. All lab personnel will wear nitrile gloves and clean footwear. Upon recovery samples will be immediately refrigerated. All sample containers will be marked and sealed in poly ethylene bags. Chain of custody documentation will be prepared. The second sample train in the test series will be rinsed with Methylene Chloride.
In addition to the stack testing two ambient sample trains will be run. For each ambient train a minimum of 110 SCF of air will be sampled for 4 hours. Four complete train field blanks will be recovered and two sets of trip blanks will be included.

A preliminary calculation of the sample data will be performed to verify iso-kinetics.

Figure 3.1 MM 5 Sample Train[RJ1]



Please note that the filter will be in the heated sample box, due to high stack moisture content.

Modified Method 18 Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas

Three two-hour runs will be performed for the Fluroether test while the scrubber is in service. 75 cubic feet will be sampled if possible. The field project manager will make this determination in the field. The sample rate will initially set at 0.75 cubic feet per minute. The objective will be to sample as much volume as possible before overcoming the train. The NPR stack exhaust are saturated with moisture. The stack gas moisture content is expected to be around 30%. The sample train has been modified from the referenced procedure by using full sized Teflon impingers. Six impingers will be charged with 100 ml each of high grade methanol. Two impingers will be added to the front of the train to knock out moisture. A short stem will be used such that the exhaust gas will not bubble through the knock out water. Liquid water must not be allowed into the methanol portion of the train. One criteria for stopping the gas sampling will be water carryover from the second knock out impinger. The probe used will be glass with a heated mantel. The mantel temperature will be kept as low as possible to avoid freeze ups. The impinger bath will be methanol and dry ice. Care will be taken to ensure the bath level is higher than the impinger level. Sampling for this procedure is not iso-kinetic. A leak test will be performed before and after each test run. After the final leak check the train will be sealed and transported to the clean room. Samples will

not be weighed in. The knock out water will be recovered. The water impingers will not be water rinsed but will be methanol rinsed. Then each of the 6 methanol impingers will be recovered into individual labeled HDPE sample bottles and the methanol rinse from each impinger added to that impinger's sample bottle. Samples will be stored and shipped on dry ice. All fluorether tests will be conducted simultaneously with a MM5 run. Start and stop times will be noted. One ambient run will be performed and two sets of field blanks will be prepared.

Figure 3.2 Original Train

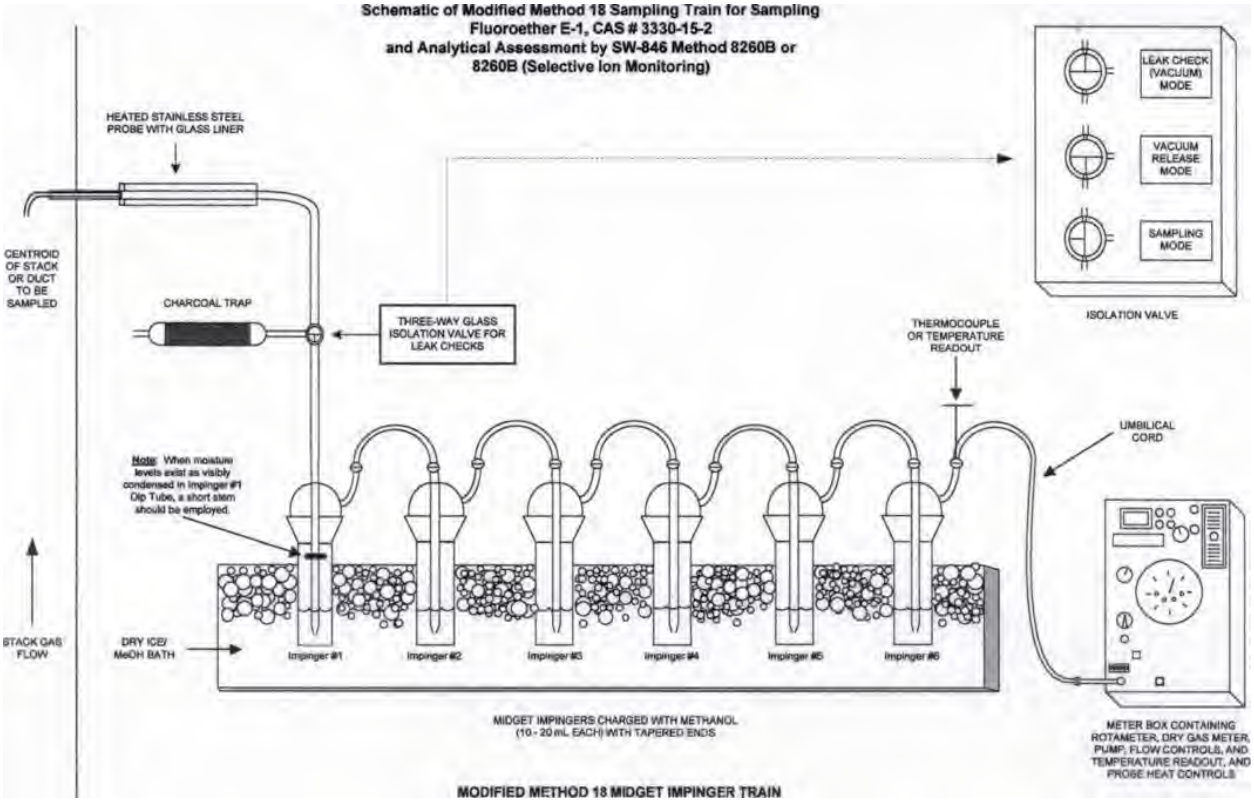
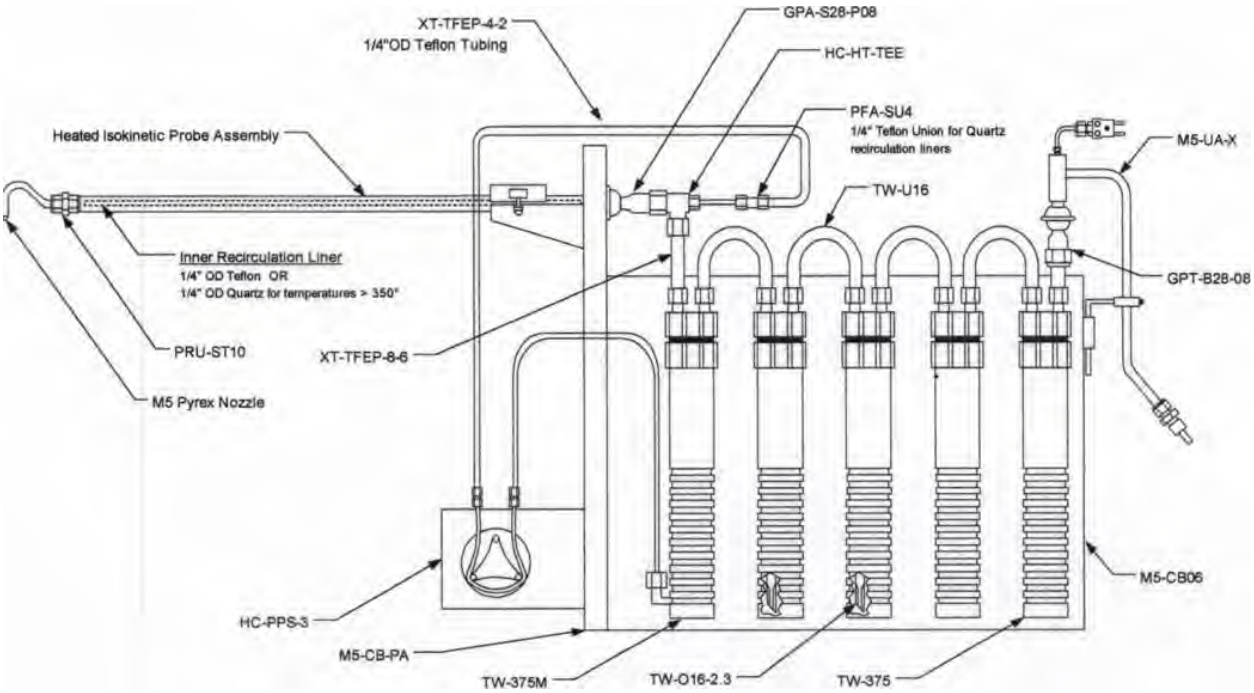


Figure 3.3 Modified Train (missing one impinger)



Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters.

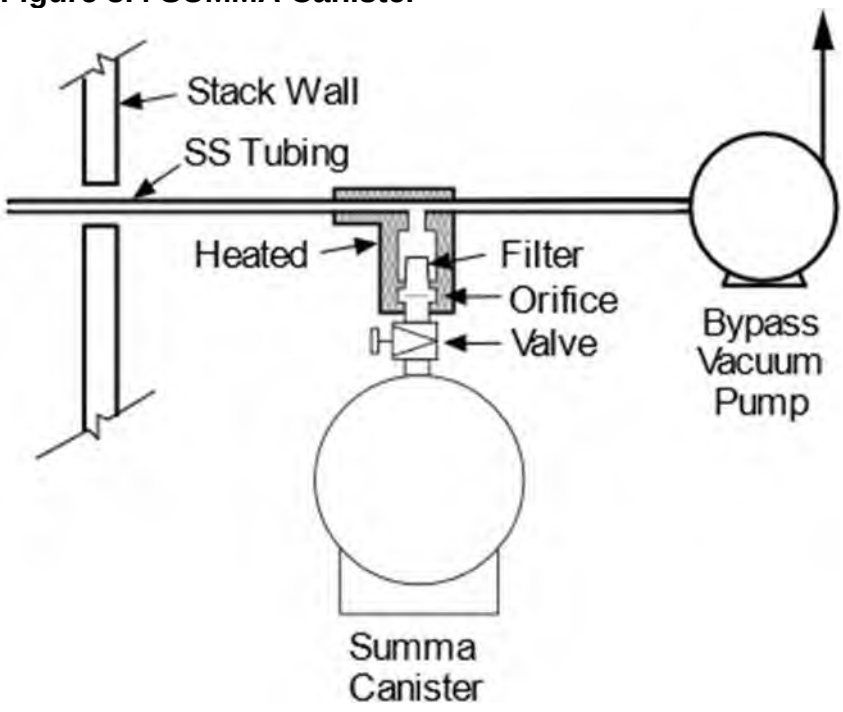
Three sample runs will be performed concurrently a MM05 test run. Sample time is expected to be 120 minutes. Care will be taken to deliver sample gas to the canister at about 10 degrees F above the stack temperature because the stack gas is expected to be 100% saturated. One ambient sample will be collected, one field blank and one trip blank will also be collected. Please refer to the attached procedure for a detailed step by step instructions. The U.S.EPA on site manager is largely responsible for this test.

EPA-ORD's SUMMA Canister Method[RJ2]

EPA-ORD's SUMMA canister sampling method will be used to collect nonpolar, volatile PFAS compounds for nontargeted analyses. Samples will be collected from a sampling manifold where the process emissions are extracted from the stack with a dedicated sampling system. The sampling system consists of an unheated sample probe (¼" OD SS) an unheated section of ¼" OD SS tubing from the probe to an ice bath moisture knock out system, an unheated section of ¼" OD SS tubing from the ice bath moisture knock out system to the sampling manifold (also comprised of ¼" OD SS tubing). The emissions sample is withdrawn from the stack with a bypass vacuum pump at a nominal sample flow of 4 – 6 Lpm. The SUMMA sample is withdrawn from the sampling

manifold. A critical orifice (~40cc/min) controls sample flow rate into the SUMMA canister. All emissions samples are collected from the vacuum side of the sample pump. At total of 3 canisters will be collected at the scrubber outlet. No samples will be collected at the scrubber bypass. An ambient sample and field blanks will also be collected. A ~4 L whole air sample will be collected over a 2h sampling period. EPA-ORD will provide the sampling system and SUMMA canisters. EPA will be responsible for sample collection and will be assisted by AST. It is understood that method deviations or modifications may be required and will be documented and provided as part of the data report. In addition, EPA-ORD staff will be on-site during testing to independently observe and document activities.

Figure 3.4 SUMMA Canister



Method 3A; O_2, CO_2

O_2 and CO_2 concentrations will be recorded concurrently with the PFAS testing by AST.

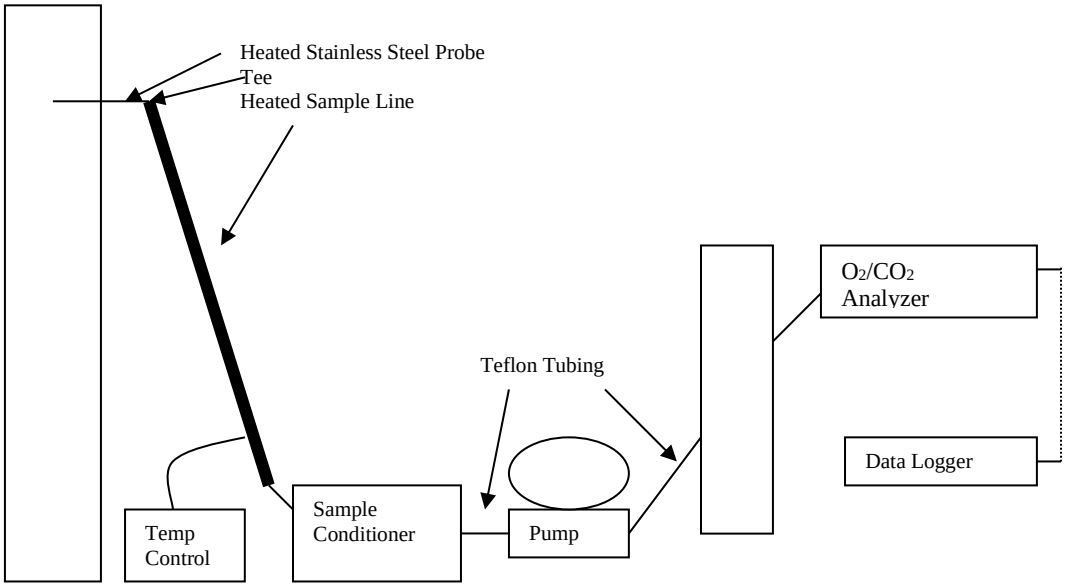
O_2 and CO_2 concentrations will be measured using analyzers on a dry basis. Emission gases will be continuously drawn through a ½-inch probe inserted in the stack. Sample gas will be extracted though a heated stainless steel probe equipped with a filter and inserted into the sample port. After verifying that the stack is not stratified, the probe will be inserted into the central section of the exhaust stack and will not be traversed during the testing. The sample gas will be drawn through a 100-foot heated Teflon sample

line, which will be maintained at 245°F, into a sample conditioner. Dry gas from the conditioner will then enter a heated head sample pump and flow to dedicated flow meters prior to entering each of the instruments. Each instrument sends an output signal to a data recorder. The stack will be continuously monitored during testing by AST. The data recorder will capture the instrument readings once every 30 seconds. The facility oxygen and carbon monoxide CEMS will also be operational as well as the COMS.

The O_2/CO_2 analyzers meet USEPA Method 3A specifications.

All of the instruments will be zeroed, calibrated, and span checked in accordance with the applicable USEPA reference methods. System integrity and response time checks will also be performed according to the appropriate USEPA Method.

Figure 3.4 Method 3A Stack Sampling System



Drawing Not to Scale

Soil Sampling

Ancillary soil and water samples will also be collected as part of this study to provide supplemental information. Soil and water samples include, but are not limited to untreated soil, treated soil, scrubber water, and scrubber make-up water. AST is providing an independent contractor for soil and water sample collection. Sampling will not be available for all days of testing, but the expectation is that samples will be collected on at least 3 separate days. It is understood that method deviations or modifications may be required and will be documented and provided as part of the data report. In addition, EPA-ORD staff will be on-site during testing to independently

observe and document activities. The collected soil and water samples will be shipped directly to EPA-ORD in RTP.

Soil and water samples will be collected on-site by Alaska Resource and Environmental Services(ARES). All fieldwork will be conducted in accordance with 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, as amended through October 2018 and ADEC Field Sampling Guidance as amended through August 2017.

Work will be done in accordance with client specifications. Sample collection and QA/QC requirements will be conducted following standard operating procedures for PFAS sampling as outlined in ADEC regulations

ARES scope of work will include labor and supplies for the following specific activities:

Environmental Consulting

1) Collect soil samples as directed by client from pre and post burn stockpiles for laboratory analysis (two sampling events); 2) Collect water samples as directed by client from water storage tank for laboratory analysis (two sampling events);
3) Collect PFAS field blanks for QA/QC purposes; 4) Document all field activities to included maps, digital photographs, daily logs and maintain accurate field notebook; and 5) Prepare and ship samples for laboratory analysis.

ARES was contracted for 2 sampling events, their scope of work may be modified to collect additional sample on-site by the U.S. EPA on-site project manager.

3.4 Description of Analytical Methods

Prior to testing, all surfaces of the test train will be washed with PFAS-free water and Alconox soap. After drying, all surfaces shall be washed three times with Methanol. All glass ware will be backed at 450 degrees F. Nitrile gloves shall be worn at all times when contacting interior surfaces of the sample train.

List of the Field Testing Equipment

- Test Console with sample flow control, dry gas test meter, temperature controllers for probe and sample box heater, thermocouple readouts, and dual incline manometers for delta H and delta P
- Leak-free vacuum pump
- Thermostatically controlled heated filter box
- Ice bath impinger tray with sample-out thermocouple sensor
- Umbilical with pitot lines, thermocouple wire, and control wiring
- A Pitot tube/probe assembly including type-S pitot tube, K-type thermocouple attached to an inconel sheath containing an inconel heated probe liner

- Stainless Steel or glass nozzles
- Glass fiber filters
- XAD traps
- Critical orifice sample flow calibration kit
- Sample recovery kit
- Analytical balance capable of determinations to 1 mg

All of the equipment specified above will be provided and/or manufactured by the Environmental Supply Company of Durham, North Carolina.

Method 3A equipment is described below. O_2/CO_2 analysis for the combustion gas sample will be performed using a Servomex 4900C1 Analyzer. The instrument specifications are listed below.

Oxygen Analyzer Components	Carbon Dioxide Components
Principle of Operation: Paramagnetic	Principle of Operation: NDIR
Span: 0-5%, 0-10%, 0-25%	Span: 0-10%, 0-20%
Linearity: Better than ± 1 % full scale	Linearity: Better than ± 1 % full
Zero/Span Drift: Less than ± 0.01 % full scale in week	Zero/Span Drift: Less than ± 1 % full scale in 24 hours

The sample conditioning system that will be used is an Alfa Laval MAK 6-2. The sample system vacuum pump is an Air Dimensions Teflon-lined head diaphragm pump.

3.5 Operational and Process Data to be Collected

The following operational data will be reported for each test run.

- Soil Feed Rate
  - Monitored continuously (via belt scale and corrected) and recorded with O2 and CO
- Fuel Consumption
  - Tank dipped before and after each shift
- Fuel Type and Characteristics
  - Evaluated upon delivery to meet required specifications
- Process temperatures for primary and secondary combustion chambers
  - Manually recorded hourly
- Bag House differential pressure
  - Manually recorded twice per shift
- COMS Data during particulate testing
  - Monitored continuously
- Differential pressure of the wet scrubber
  - Monitored continuously
- Excess Oxygen
  - Monitored continuously
- Carbon Monoxide Concentration
  - Monitored continuously

4 QA/QC Requirements

The activities of this project will be conducted in accordance with the AST Quality Program Manual QPM-1, Rev.1, 08/08/10. Quality control and quality assurance for all sampling and analytical procedures will be performed as required by the appropriate USEPA Reference Methods. All calibration gases will be USEPA protocol certified gases.

Sample equipment QC will include the following pre- and post-test calibrations:

- Calibrations for dry gas test meter & delta H orifice
- Temperature calibrations for all thermocouple sensors
- Confirmation of S-type pitot tip geometry
- Nozzle tip diameter
- Analytical balance

Do you have anything about Chain-of-Custody, documentation (e.g., standardized data sheets, lab notebooks, etc.? My QA folks look for that kind of stuff

Test America will provide pre labeled sample bottles that match a detailed chain of custody procedure. The procedure contains the entire sample matrix and documentation for the field team to fill out. As soon as the samples are recovered in HDPE bottles the on-site laboratory manager, William Hudson, will date, initial the bottles and mark the level. The bottles will be placed in HDPE bags and will be refrigerated or placed on ice. The Method 18 methanol samples will be kept in coolers with dry ice.

The Final Report will include the following sections:
Note: To the extent practical the format given in the Source Test Report Outline in Vol. III, section IV.3 of the state Air Quality Control Plan will be followed.

a) Test rationale;
b) Test objectives;
c) Description of test location and testing conditions;
d) Description of sampling procedures and analytical methods, detailing any exceptions to established reference methods and procedures;
e) Summary of test results; and
f) Description of QA/QC methods and results.

Report appendices will include the following elements:

a) Tabulation of all produced test results;
b) Example calculations for all test and emission determinations;
c) Raw test data including field data sheets, operational data sheets, strip charts, analytical data sheets, and computer printouts;

d) QA/QC documentation including analyzer response and performance checks, sensor calibration sheets, results of analytical spikes and blanks, traceability certificates of calibration standards, and opacity reader certification;
e) Relevant agency correspondence; and
f) Listing of project personnel, affiliation, and role.

5 Tentative Test Schedule

- The testing is scheduled to start on October 12, 2019

- AST will send a Draft report to EPA within 30 days of test completion that includes stack velocity and flow rates
- AST will issue a revised report that includes laboratory data converted mass /time 15 days after receiving the final Test America report.

APPENDIX A

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas

Sampling and Field Procedure for the Evaluation of Fluoroether E-1 in Stack Gas

Sample Name: Modified Method 18 Midget Impinger Sampling Method

Sampler: Stack Sampling Specialists

Sampling Locations: Stack Sampling Platform

Sampling & Health & Safety Equipment: Sampling apparatus and safety equipment recommendations are as follows:

- Method 18 Midget Impinger Sampling Train (See schematic)
- HDPE 60 ml sample bottles with screw-top caps
- Purge and Trap Grade Methanol for Impinger charges and glassware rinses
- Clean or New HDPE squirt bottles
- Safety glasses or face shield
- Latex Gloves and other site specific safety equipment as required
- Dry Ice / Methanol Bath for chilling the impinger train

Sampling Strategy and Design: The target analyte for this sampling campaign is Fluoroether E-1, CAS # 3330-15-2). This compound is classified as a volatile boiling point compound (40°C) and can be trapped into methanol charged impingers chilled in a dry ice /methanol bath. The final Fluoroether E-1 train-total concentration determined by this sampling train will be the sum of the following analytical fractions:

[Total µg in Impinger #1] + [Total µg in Impinger #2] + [Total µg in Impinger #3] + [Total µg in Impinger #4] + [Total µg in Impinger #5] + [Total µg in Impinger #6] = Train Total µg of E-1 for the Sampling Run

Sample Collection Rates: Stack gas collections are conducted continuously at a nominal rate of 0.25 Liters/minute during the sampling run for 60 minutes of sampling time or longer. A greater number of minutes may be required to include specific batch operations or specific process campaigns within the plant operations. Inherently low stack gas concentrations of Fluoroether E-1 may also require longer sampling times in order to evaluate the concentrations detectable by the analytical methodology employed. Breakthrough to the last impinger will be a concern at some point, therefore slow sampling coupled with the maintenance of the dry ice train chilling are essential operational targets.

The intact sampling train is sealed and removed from the stack sampling platform to the train recovery area. Following removal to the sampling trailer the various train components are collected in individual 60 mL HDPE vials.

FINAL DRAFT 9/7/2018

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas (Continued)

Each 60 minute (or greater) complete sampling train collection constitutes a Sampling Run under these conditions. Three (3) complete sampling runs will complete a test condition.

Sampling Procedures:

The preparation of Modified Method 18 Train glassware, probes, and connecting glassware should incorporate a thorough cleaning and rinsing of these components with Purge and Trap grade methanol. Glass components should be baked in an oven at 100°C for 2 hours followed by a final methanol rinse. Any tubing used during the sample collections to connect the sampling probe to the impinger train should be new, and receive an initial methanol rinse before the test commences.

Persons handling the midget impinger train components should don latex gloves. Fresh gloves should be worn during each separate stage of train handling to avoid the transfer of contamination to the train.

A strict approach should be taken toward the quarantine of essential personnel and equipment used during the collection of Fluoroether E-1 samples to avoid contamination of these samples.

Storage and handling of train components and samples are required to be done in a clean sampling trailer or lab space. Solvents like toluene, methylene chloride, and acetone have the potential to severely cross contaminate the Modified Method 18 samples unless deliberate care is taken to prevent exposure to these solvents.

The midget impingers and connecting glassware should be protected from contamination by placing them in separate clean coolers during shipping and storage at the sampling locations.

Modified Method 18 Impinger Train Operation -- The sample collection procedure set-up generally follows standard EPA protocols. The dry gas meter will be calibrated before arriving at the test site, and the sample train components will be cleaned and assembled before charging the midget impingers with Purge and Trap grade methanol. The train will be leak tested at approximately 10 inches of Hg using a system isolation valve that prevents exposure of the train to possible contamination in the ambient air during the leak check. Leak tests will be conducted before and after the sampling interval for each run.

Before the run is commenced, all six (6) impingers are charged with 15 - 20 mls of methanol. The impinger train will be set into a dry ice / methanol bath for the duration of sample collection. The sampling train should be submerged in the dry ice / methanol bath to a level where the methanol level in each impingers are slightly below the ice bath external fluid level to maximize the cooling efficiency of the methanol. The analyte being collected during this stack emissions characterization is Fluoroether E-1 (CAS # 3330-15-2) whose boiling Point = 40°C. Under these operating conditions the Fluoroether E-1 analyte efficiently traps and is isolated for analysis in the impinger methanol. Once the E-1 is dissolved in the methanol, the handling of the samples is expected to be relatively easy to maintain.

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas (Continued)

The probe of the sampling train will be inserted into an appropriate sampling port and purged with stack gas to fill the dead volume of the train before the actual sampling is started. The Fluoroether E-1 sample collection is a non-isokinetic process so a single point probe location is set. The probe will be heated to a few degrees above the stack gas temperatures to prevent the condensation of moisture in the probe during the run. The stack gas will be sampled at a rate of 0.25 L/min for ≥ 60 minutes to collect a nominal sample volume of ≥15L for each run.

At the completion of the sampling run on the stack, the sampling train will be disconnected from the probe assembly and capped. The assembled train will be secured in a carriage or cooler, and moved to the sampling trailer for the completion of the train breakdown process. A cleaned or new HDPE squirt bottle should be used for all probe and glassware rinses. A squirt bottle previously used with any solvent other than Purge and Trap grade methanol should be avoided. The probe assembly and connecting glassware receive triple methanol rinses and the rinsates will be placed into the labelled sample container used for the collection of Impinger #1 contents.

The contents of Midget Impinger #1 will be placed into the 60 ml HDPE sample container clearly labeled with the run number and impinger number. The impinger will be triple rinsed with small aliquots of methanol and the rinses are added to the container. The probe and connecting tubing will also receive methanol rinses that are placed in with the Impinger #1 sample fraction. Using a clean (or new) HDPE squirt bottle the probe and all related connecting glassware are rinsed into the Impinger #1 sample container. Three (3) small volumes of methanol should be sufficient to effectively rinse the train components.

Midget Impinger #2 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

Midget Impinger #3 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

Midget Impinger #4 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

Midget Impinger #5 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

Midget Impinger #6 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

After collecting the samples, the Methanol impinger samples will be placed in Ziploc® bags and stored in coolers on dry ice.

Modified Method 18 Midget Impinger Method for Determination of Fluoroether E-1 Emissions in Stack Gas (Continued)

During a sampling run, a complete blank train will be set up to simulate the handling of the actual test samples. The Methanol will remain in an identical train for the approximate length of time required to complete a sampling run. The beginning and end leak checks will be performed on the blank train, and the probe will be heated to the standard operating temperature. Samples will be recovered from the blank train by the same operator and in the same location as those for the standard runs.

Samples will be placed on dry ice in clean coolers, which will be stored in an area away from other samples and potential sources of contamination.

Laboratory Analysis:

The analytical laboratory will conduct screening level analyses followed by analyses of the Modified Method 18 Methanol impinger samples by SW-846 Method 8260B. Generally, a 10ul portion of the impinger sample is placed into the purge and trap device of the instrument. Method 8260 surrogate compounds and internal standards are added to the portions of the samples processed. For low level samples, the portion of the original sample added is increased to a 100µl portion placed onto the purge and trap device. The higher injection portions are considered after sample screening is completed and if sample loadings are below the calibration range of the instrument. Dilutions of samples may also be required for highly concentrated impinger samples. For very low concentrations of E-1 in samples, selective ion monitoring (SIM) will be employed to quantify the target analyte.

Quality Control/Quality Assurance Requirements:

A train blank set of Modified Method 18 samples will be collected one time during each test campaign. The train blank will be assembled and placed near the stack sampling location for the duration of one sampling run. The blank train will be leak checked at the beginning and end of the sampling period.

A methanol trip blank and reagent blank will be included with all modified Method 18 samples sent to the analytical laboratory.

Samples are to be stored on dry ice from the time they are collected from the impinger glassware and placed into sampling bottles.

Holding Times: All samples are to be analyzed within 14 days of collection.

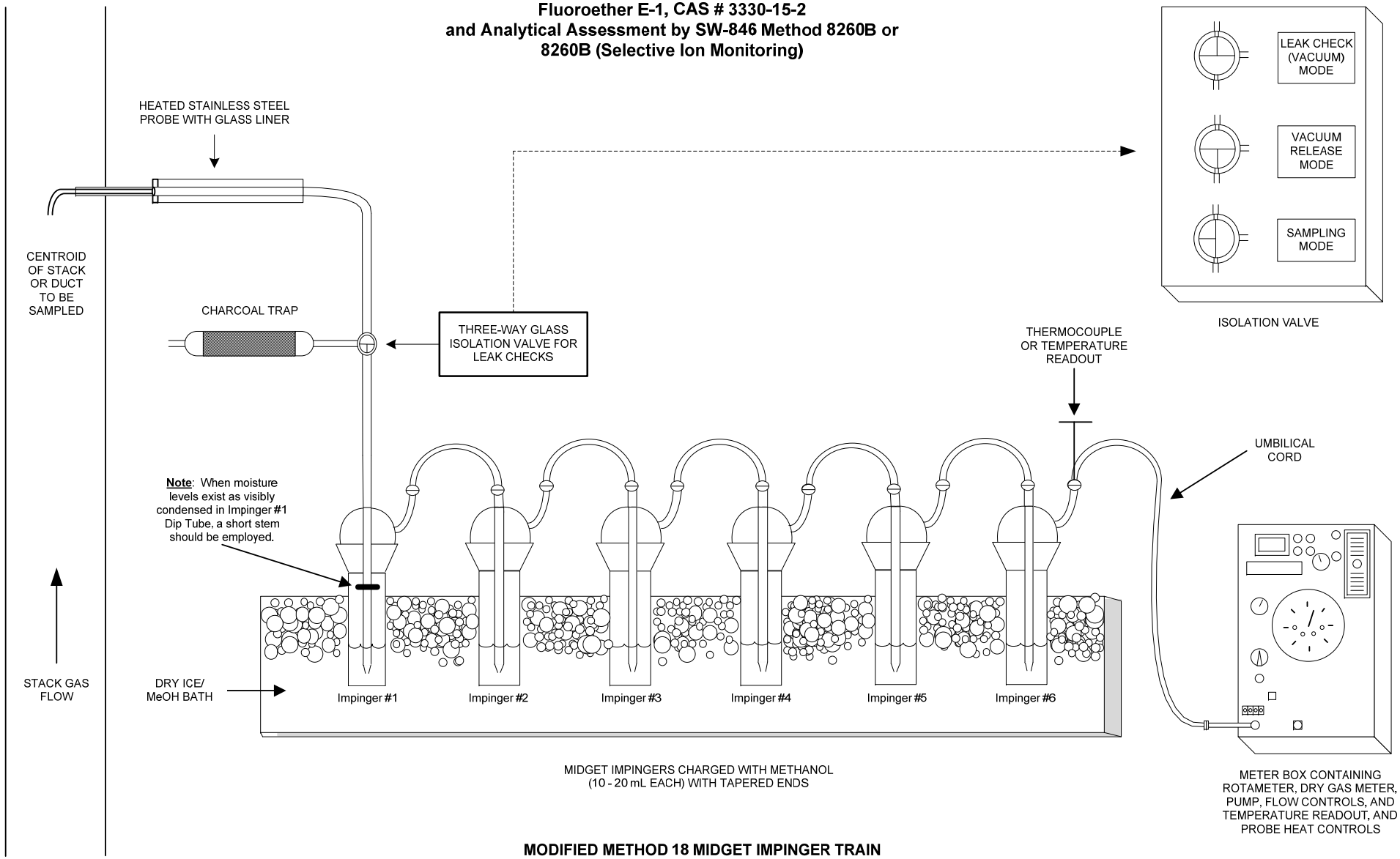
Method References:

Modified Method 18 – “Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.” EPA 40 CFR Part 60, Appendix A.

Method 8260 - "Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)". Taken from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, September 1986 and its updates. USEPA, OSWER, Washington, D.C. 20460.

DRAFT

Schematic of Modified Method 18 Sampling Train for Sampling Fluoroether E-1, CAS # 3330-15-2 and Analytical Assessment by SW-846 Method 8260B or 8260B (Selective Ion Monitoring)



MODIFIED METHOD 18 MIDGET IMPINGER TRAIN

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Created by Patti Bales_Last Edited on 9/5/2018 1:02 PM

Modified Method 0010 (MM-5) Sampling Train

Method for Determining HFPO-DA and Other Method 537 PFAS Compound Emissions in Stack Gas

Sampling and Field Procedure for the Collection of PFAS Compounds from Stack Gases

Sample Name: Modified Method 0010 (MM-5) Sampling Train

PFAS Compound List (Method 537)	CAS Number
HFPO-DA	13252-13-6
Perfluorobutanesulfonic acid (PFBS)	375-73-5
Perfluorobutanoic acid (PFBA)	375-22-4
Perfluoropentanesulfonic acid (PFPeS)	2706-91-4
Perfluoropentanoic acid (PFPeA)	2706-90-3
Perfluorohexanesulfonic acid (PFHxS)	355-46-4
Perfluorohexanoic acid (PFHxA)	307-24-4
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8
Perfluoroheptanoic acid (PFHpA)	375-85-9
Perfluorooctanesulfonamide (FOSA)	754-91-6
Perfluorooctanesulfonic acid (PFOS)	1763-23-1
Perfluorooctanoic acid (PFOA)	335-67-1
Perfluorononanesulfonic acid (PFNS)	68259-12-1
Perfluorononanoic acid (PFNA)	375-95-1
Perfluorotridecanoic acid (PFTriA)	72629-94-8
Perfluorotetradecanoic acid (PFTeA)	376-06-7
Perfluoroundecanoic acid (PFUnA)	2058-94-8
Perfluorodecanesulfonic acid (PFDS)	335-77-3
Perfluorodecanoic acid (PFDA)	335-76-2
Perfluorododecanoic acid (PFDoA)	307-55-1
4:2 FTS	757124-72-4
6:2 FTS	27619-97-2
8:2 FTS	39108-34-4

Sampler: Stack Sampling Engineer

Process Sample Location: Stack Sampling Platform

Sampling &
Health & Safety Equipment: Sampling and safety equipment is as follows:

- Modified Method 0010 (MM-5) Sampling Train (See Schematic Below)
- Organic-free D.I. water

- 2 Liters of Methanol / 5% NH_4OH
- 125 mL HDPE Bottle – Particulate Filter
- 250 mL HDPE Bottle – Probe, Nozzle and the Front-Half of the Filter Holder Methanol /5% NH_4OH Solvent Rinses
- XAD-2 Resin Tube
- 250 mL HDPE Bottle – Back-half of the filter holder, coil condenser and connecting glassware Methanol / 5% NH_4OH Solvent Rinses
- 500 mL HDPE Bottle -- Condensate and impinger contents of impingers #1, #2, and #3. (**No Methanol / 5% NH_4OH Solvent Rinse is to be mixed into this sample)**
- 250 HDPE Bottle – Impingers #1, #2, and #3 and Connecting Glassware Methanol / 5% NH_4OH Solvent Rinses
- Breakthrough XAD-2 Resin Tube
- New HDPE Squirt bottles for Methanol / 5% NH_4OH Glassware Rinsing Solvent
- Graduated cylinder
- Safety glasses or face shield
- Latex gloves and other safety equipment as required
- Silica gel desiccant

Sample Collection Frequency:

The stack gas is generally sampled continuously for approximately 4 hours or until at least 3 m^3 (dry standard cubic meters) of stack gas sample is collected for each run. The nominal sampling rate should be ≤ 0.75 m^3 per hour to avoid large ΔP across the train which promotes breakthrough of the target analytes. Three runs will constitute a test. Lower sample volumes may be appropriate for less aggressive stack test characterization objectives.

Sampling Procedures:

XAD-2 Resin Tube Preparation - The laboratory will prepare the XAD-2 resin tubes and deliver them to the sampling team for use during the project. The procedures for preparing, handling, storing, and analyzing the tubes are those described in the U.S. EPA SW-846 Methods referenced below. Pre-cleaned XAD-2 resin is commercially available (Supelco®) and will be used to prepare the resin tubes. Two XAD-2 resin tubes using the same purchased lot of resin will be prepared with the field sampling tubes and archived in the laboratory until field samples return for analysis. These resin tubes are referred to as Spiked Resin Blanks. The Spiked Resin Blanks are placed into the sample analysis batch with the field samples at laboratory check-in and analyzed to confirm that the resin lot used for this project is free from background PFAS contamination. The spiked resin blanks also demonstrate that the XAD-2 resin displays appropriate recovery characteristics of the target analytes.

For storage and transport to the field, the XAD-2 resin tubes will have their ends sealed with Teflon® tape or end caps, wrapped in aluminum foil, sealed in Ziploc® bags or bubble wrap, and packed in a clean sample cooler. In the field, the cooler will be stored in the sample recovery area

and the resin tubes are removed only when ready for installation into the sampling train.

Before each sampling run, the Sampling Coordinator will supply a XAD-2 resin tube to the Stack Sampling Engineer who will direct the operation of the MM-5 train. At the end of each run, the Sample Coordinator will recover from the Stack Sampling Engineer the resin tubes and other train components and complete the preparation of the field sample documentation. The MM-5 stack samples will be stored on ice at approximately 4^{o}C in insulated coolers in a storage area away from sources of fugitive contamination.

MM-5 Train Operation - With the exception of the necessary modification for installing and recovering the XAD-2 resin tubes and the Front-half operation temperature, the sampling procedures will be as specified in U.S. EPA Methods 1 and 2 for stack flow measurements, and Method 4 and 5 for moisture content and particulate. An initial traverse is made with a pitot tube at each sample point following U.S. EPA Methods 1 and 2 to establish the stack velocity profile, temperature, flow rate, and to check for cyclonic air flow. Sample point location will be in accordance with U.S. EPA Method 1. The sampling team will record the data as recommended in Method 5. The Front-half temperature should be maintained above the dew point of the moisture in the gas stream, but well below the normal Method 5 temperatures. These temperatures are lowered to prevent the thermal decomposition of HFPO-DA and other PFAS compounds known to change composition with temperature.

Impinger #1 will be an empty condensate knockout impinger. The MM-5 train will be charged with 100 ml of organic-free DI water in Impinger #2 and Impinger #3. Following Impinger #3, the sampling train will be equipped with a Breakthrough XAD-2 Resin Tube which will serve as an indicator that the loadings of PFAS target compounds have not exceeded the capacity of the standard sampling train components. The Impinger #4 will contain indicating silica gel which is tare weighed to the nearest 0.5 gram.

The sampling train will be leak tested according to U.S. EPA Method 5 protocols. A Teflon® plug or a sampler's thumb covered with Teflon® tape will be placed over the end of the nozzle to ensure that no contaminants are transferred to the train during nozzle leak checks.

It is important that ice water circulation through the coil condenser and the XAD-2 water jacket be cold as reasonably possible. The exit temperature of the coil condenser effluent (water and gases) should be maintained low to prevent target analyte breakthrough.

MM-5 Train Sample Recovery - The seven (7) sample fractions that will be separately recovered from the MM-5 train are as follows:

- Particulate Filter – The particulate filter will be removed from the filter holder and carefully folded or rolled with the particulate matter sample on the inside, placed in the 125 ml HDPE sample bottle designated for its collection and sealed with Teflon® tape.

- Solvent Probe Rinse - The nozzle, probe, the front-half of the filter holder will be brushed and rinsed three times with Methanol / 5% NH_4OH. The rinses are placed in a 250 mL HDPE labeled sample bottle designated for its collection, and sealed with Teflon® tape.

- XAD-2 Resin Tube - The XAD-2 resin tube will be removed from the sampling train, its ends capped or sealed with Teflon® tape, wrapped in aluminum foil, sealed in a Ziploc® bag, and stored on ice for shipment to the laboratory.

- Back-half of the Filter Holder, Coil Condenser and connecting glassware Methanol / 5% NH_4OH solvent glassware rinses - The back half of the filter holder, coil condenser, and connecting glassware will be rinsed three times with solvent. The rinses will be combined and placed in a 250 mL HDPE labeled sample bottle designated for its collection, and sealed with Teflon® tape.

- Condensate and Impinger Contents of Impingers #1, #2 and #3 - The aqueous contents of each individual impinger (1-3) will be volumetrically or gravimetrically measured to the nearest milliliter, recorded separately for moisture calculations, and then combined into a 500 ml HDPE labelled sample bottle designated for its collection, and sealed with Teflon® tape. All three impingers and connecting glassware are rinsed three times with DI water. The rinses are then added to the sample bottle. **No solvent should be placed into this sample. Severe interference will result.**

- Impingers #1, #2 and #3 Solvent Glassware Rinses - Rinse Impingers #1, #2 and #3 and connecting glassware pieces three (3) times each with the Methanol / 5% NH_4OH solvent. Place these solvent rinses in a separate labeled sample HDPE sample bottle designated for its collection, and seal it with Teflon® tape.

- Breakthrough XAD-2 Resin Tube—The Breakthrough XAD-2 resin tube will be removed from the sampling train, its ends capped or sealed with Teflon tape, wrapped in aluminum foil, sealed in a Ziploc bag, and stored on ice for shipment to the laboratory.

- Silica Gel - The silica gel impinger will be reweighed to the nearest 0.5 gram and the weight gain is calculated as moisture gain in the train.

All of the MM-5 sample components will be assigned unique sample tracking numbers and labeled with date and test run number. The

samples will be recovered by the Sample Coordinator and the Stack Sampling Engineer, and the sample collection documentation will be completed. The Sample Coordinator will be responsible for the completion of the field collection data for Chain-of-Custody records, and for packaging the samples on ice in a storage cooler.

Quality Assurance:

A complete MM-5 blank train will be prepared once during the test series. It will be set up near the base of the stack in a manner similar to the actual MM-5 sampling train and applying an equivalent number of associated leak checks. It is required that the blank train be set up during one of the actual PFAS sampling runs. The train will remain sealed with the filter holder and probe heated to their operating temperature at that location for a time period equivalent to one test run. The blank train samples will be recovered using the same procedures, in the same sample recovery location, and by the same person as implemented for the actual train samples.

An XAD-2 resin trip blank will be transported and stored at the location of train assembly, breakdown, and sample storage during the test campaign. The XAD-2 resin blank should remain in the assembly area for the duration of the actual test campaign. The XAD-2 trip blank should accompany the Modified Method 0010 shipment of samples to the laboratory.

Reagent Blank samples of the methanol / 5% NH_4OH solution used in the field and the D.I. Water used in the field should be collected once for the test campaign.

The two (2) spiked resin blanks of the XAD-2 resin (archived at the time of the original media preparation) are prepared and analyzed with the field samples to display target PFAS analyte background in the resin, and to display the target analyte spike recovery characteristics.

Liquid samples should have the liquid levels clearly marked on the sample bottles in the field to display the final sample content levels.

Sample Preservation:

The holding times for PFAS samples collected in Modified Method 5 sampling trains is 14 days from the time of sample collection to extraction. All samples should be preserved on ice at approximately 4^{o}C.

Method References:

Method 3542 – “Extraction of Semivolatile Analytes Collected Using Method 0010 ("Modified Method 5 Sampling Train")”. Taken from Test Methods for Evaluating Solid Waste: Physical/Chemical Methods Compendium, SW-846, Third Edition, September 1986 and its updates, USEPA, OSWER, Washington, D.C. 20460.

Method 0010 – “Modified Method 5 Sampling Train”. Taken from Test Methods for Evaluating Solid Waste: Physical/Chemical Methods Compendium, SW-846, Third Edition, September 1986 and its updates, USEPA, OSWER, Washington, D.C. 20460.

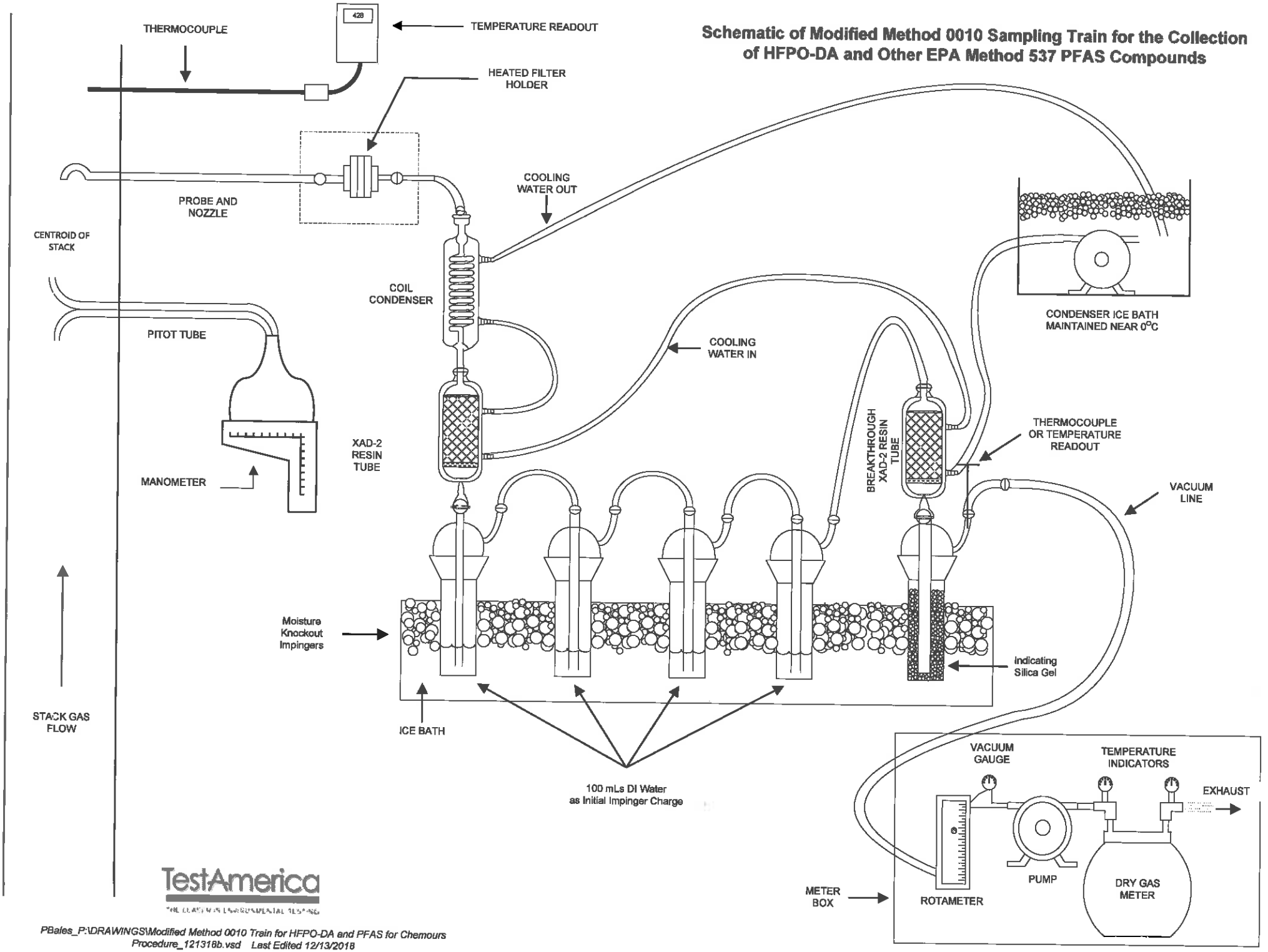
Method 5, Appendix A, Test Methods and Procedures, New Source Performance Standards, 40 CFR 60.

EPA Method 537 – "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) (Rev. 1.1)

Handbook - Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration (EPA-625/6-89-023).

DRAFT

Schematic of Modified Method 0010 Sampling Train for the Collection of HFPO-DA and Other EPA Method 537 PFAS Compounds



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United States Environmental Protection Agency

INTERNAL NRMRL/AEMD PROCEDURE

Collection of Whole Air Emissions Samples for VOC and PFAS Analysis Using SUMMA Canisters

NRMRL
Standard Operating Procedure (SOP)

Title:	**NRMRL XXXXXX PROCEDURE**
Division/Staff:	**NRMRL/AEMD/SSB**
SOP Number:	**NRMRL-XXXX-01-0**
Former SOP Number: (if applicable)	N/A
Effective Date:	

SOP Author(s)	
Name: * Jeff Ryan AEMD/SSB Principal	Name: Ingrid George AEMD/DSBB Chemist
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QA Approval	
Name: Libby Nessley AEMD QA Manager	Signature/Date:
Management Approval	
Name: Jackie Rosati AEMD/SSB Branch Chief	Signature/Date:
Name:	Signature/Date

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1 INTRODUCTION

Perfluoroalkyl substances (PFAS), are a class of manufactured compounds that are used in the manufacture of various and diverse commercial products. These products are often materials, such as fabrics and surfaces, which are treated to provide resistance to heat, oils, water, friction, etc. PFAS may be used as intermediates to larger fluoropolymers, used as surfactants to improve treatment processes, and are the primary surfactant in fire-fighting foams. In many applications, vaporized PFAS compounds, are subsequently discharged as gaseous emissions through process vents, ducts, or stacks. Currently, no formal PFAS air emissions method or methods exist. Industrial emissions testing, has become a major scientific need. The use of SUMMA cans is an approach being used to collect volatile PFAS compounds from industrial sources.

SCOPE

The purpose of this SOP is to provide general guidance and instruction on how to collect representative whole air emissions samples with SUMMA canisters from industrial sources.

2 DEFINITIONS

Term	Definition
COC	Chain of Custody
PFAS	Perfluorinated Alkyl Substances
SOP	Standard Operating Procedure
VOC	Volatile organic carbon

3 ROLES AND RESPONSIBILITIES

Jeff Ryan is the primary author of this procedure and will oversee its use by others.
Ingrid George oversees SUMMA can analyses and will coordinate associated QA/QC which is covered under a separate MOP.

4 PROCEDURES

4.1 Method Summary

Time-integrated, whole air emissions samples are collected from candidate industrial sources using SUMMA canisters for subsequent VOC analyses, including PFAS. Samples are collected from a sampling manifold using evacuated SUMMA canisters equipped with critical orifice sample flow controllers. The whole air emissions samples collected are intended to be sampled from industrial source ducts, vents, stacks, etc., with relatively low moisture contents (<~5% v/v) and with sample gas temperatures <~250 °F. A heated or unheated sampling manifold may be used to extract and deliver a representative gaseous sample from the source and allow the SUMMA canister to be collected. Alternatively, the SUMMA canister sample can be collected directly from the source by a short sample line. Care should be taken to minimize the dead volume between the sample location and the SUMMA canister and to use sampling materials compatible with intended analyses. The actual volume of sample collected is limited to minimize the potential for moisture condensation within the SUMMA canister during sampling as well as

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storage and shipment. This is accomplished by retaining ~10-20" Hg vacuum within the SUMMA canister following sampling.

4.2 Sample Preservation, Containers, Handling, and Storage

Once the SUMMA canisters have been sampled, they should be placed back in the individual boxes and then in the shipping box provided. They should be stored in a dry location and preferably above freezing temperatures. Copies should be made of the custody sheets and the originals placed in the shipping boxes and shipped to the following address:

US EPA
ATTN: Ingrid George
Building E Chemical Services
109 T. W. Alexander Drive
Durham, NC 27709

4.3 Health and Safety Precautions

The only safety concern is potential heat from contact with the sampling manifold.

4.4 Interferences

Not applicable

4.5 Reagents and Supplies

None required

4.6 Equipment/Apparatus

A diagram of the sampling system is depicted in Figure 1. An example sampling manifold assembly is pictured in Figure 2. The sampling system consists of a heated transfer line (Stainless Steel for PFAS sampling) and the heated filter and critical orifice sample controller. The inlet and outlet of the heated transfer line (the inlet is the heated end) are used to extract sample from the source with a bypass pump past the fitting where sample gas is tapped for the SUMMA canister sample. It is assumed that the inlet of the transfer line will be connected to the source independent of this procedure. The bypass pump will enable the sample to be extracted from the source and may also help convectively heat (if needed) the line connecting the source (e.g., probe) to the sampling manifold. The outlet of the transfer line is connected to a bypass pump (provided) which nominally runs at a sampling rate of ~8 lpm. The bypass pump flow rate is not critical and will be dependent on the final configuration and pressure drops along the system.

4.7 Procedure

Once sampling system assembly is complete, the manifold can be heated. A suggested heating temperature is to match the duct/vent/stack gas temperature or go slightly above (e.g., 10 °F). A staged heating cycle is also suggested (e.g., heat to ~ 150 °F, let it equilibrate, then heat to final temperature).

NOTE: For PFAS emissions tests, the orifice flowrates nominally sample at ~40 cc/min. At 60 min sample time, a nominal total sample volume is estimated to be ~2.4L. This results in a calculated and observed final pressure of 18" Hg vacuum.

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Once the sampling system is operational and the manifold has reached the desired heating temperature, sampling may begin. The following sequence should be followed:

1) Make sure valve is closed
2) Remove cap
3) Attach pressure gauge
4) Open valve
5) Record initial pressure (it should register 30" Hg vacuum – see Figure 3)
6) Close valve
7) Remove pressure gauge
8) Attach SUMMA can to manifold
9) When ready to sample, open valve, record start time/start timer (60 min run time)
10) When run is complete, close valve, record stop time, disconnect from manifold
11) Attach pressure gauge
12) Open valve
13) Record final pressure (Should be ~ 18-20" Hg vacuum)
14) Close valve
15) Remove pressure gauge
16) Replace cap
17) Make sure valve is closed

Repeat for additional samples.

4.8 Calculations

None

4.9 Quality Assurance/Quality Control

It is expected that all SUMMA cans used for PFAS emissions testing will be blanked by the targeted analytical procedure to demonstrate cleanliness prior to being provided for sampling.

At least one field blank (check pressure, attach to manifold, remove, check pressure) should be performed for each test campaign. A system blank, where clean nitrogen or air from a compressed gas should be supplied to the sampling manifold, and a SUMMA sample collected is recommended, but not required.

Chain-of-Custody (COC) sheets for tracking canister and sampling information are provided separately. These sheets should be used to document sampling start/end time, total duration, initial and final pressures, as well as ancillary information such as sampling location, test conditions and other pertinent information.

5 RECORDS GENERATED

File Type	Agency File Code	Closure	Retention	Custodian/location records

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Sample COC	1035(c)-Project/Short term record	Project Completion	10 years	Ingrid George

6 REFERENCES

None right now

List any policies, procedures, or laws applicable to this procedure. Include all references applicable to delegation of authority provided within the SOP.

7 REVISION HISTORY

Revision #	Description	Effective Date
0	Initial approval	

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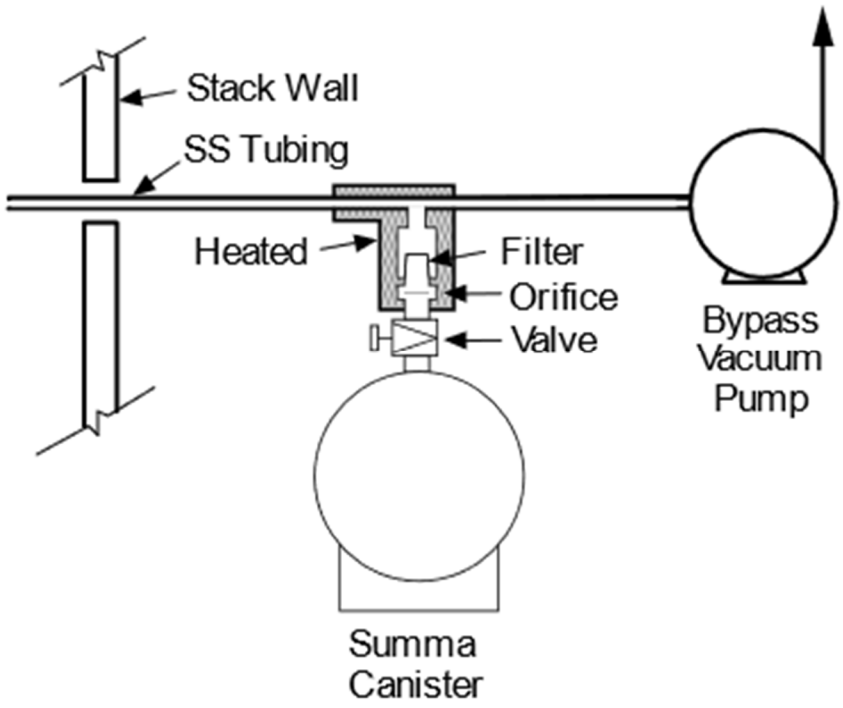

Figure 1. Sampling System Diagram

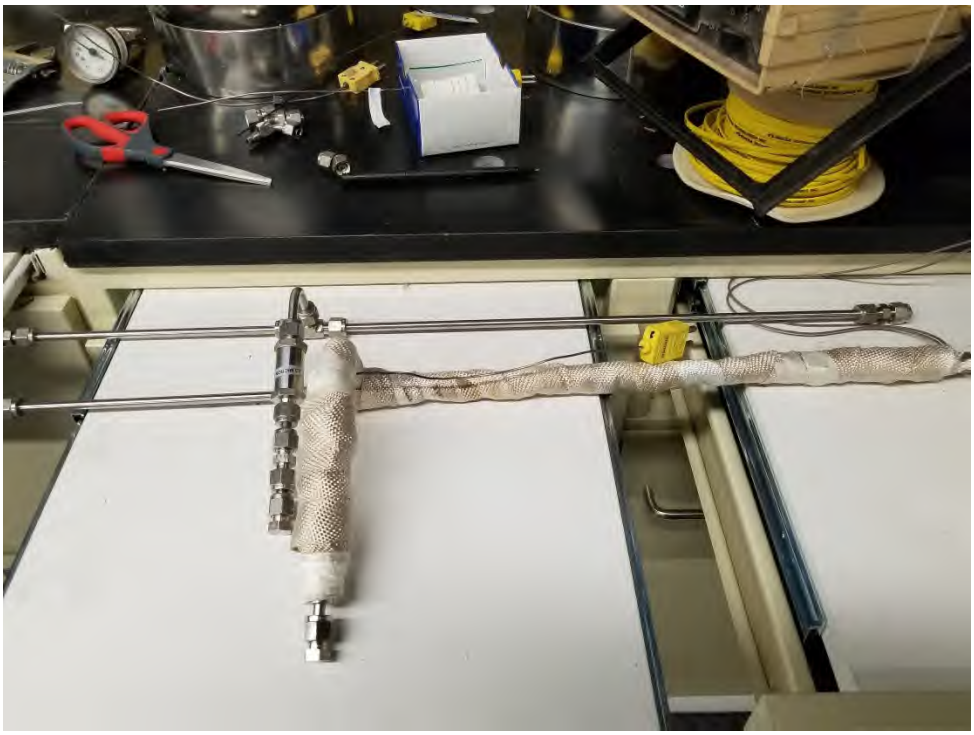

Figure 2. Example Sampling Manifold

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Figure 3. SUMMA Canister with Vacuum Gauge (before sampling)

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APPENDIX B

In support of this air emissions study, samples of the soil to be treated during the test will be collected both before and after thermal treatment. In addition to the soil samples, samples of the fresh water used to cool and scrub the exhaust gasses as well as samples of blowdown from the packed tower wet scrubber will be collected. Collected samples will be submitted to EPA for analysis. EPA will be responsible for the analysis of all samples and any evaluative effort and reporting prepared for this sampling effort. NRC will be responsible to collect and analyze their own requisite samples and complete all necessary documentation as required under their existing approvals as they would for normal operations.

Alaska Resources and Environmental Services, LLC (ARES) has been contracted to collect the soil and scrubber water samples and then ship all samples to EPA. The following sections outline the methodology to be employed by ARES for the completion of this sampling effort.

The sampling work will be conducted by Mr. Mark Carpenter/Environmental Specialist for ARES. Mr. Carpenter has the documented experience (numerous COE projects, Phase II Environmental Site Assessments, Release Investigations, and Site Remediation/Restoration projects) and education to successfully complete this project. Mr. Carpenter meets the qualifications of an Environmental Professional by the State of Alaska Department of Environmental Conservation (ADEC).

All fieldwork will be conducted in accordance with 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, as amended through October 2018 and ADEC Field Sampling Guidance as amended through August 2017. Sample collection and QA/QC requirements will be conducted following standard operating procedures for PFAS sampling as outlined in ADEC regulations and guidance.

ARES scope of work will include the following specific activities:
1) Collect soil samples from pre- and post-treatment soil stockpiles for analysis (two sampling events);
2) Collect water samples from water storage tank and wet scrubber for analysis (two sampling events);
3) Collect field blanks for QA/QC purposes;
4) Document all field activities to included maps, digital photographs, daily logs and maintain an accurate field notebook; and
5) Complete chain of custody and prepare and ship samples to EPA for analysis.

At this point it is assumed that sample collection will occur on two different dates. The first either immediately before or at the very beginning of the test and the second at or near the end of the test. During the first sampling event, ARES will collect samples of the soil before treatment takes place. It is unknown at this point how the soil will be stockpiled before treatment (a single pile or multiple piles), but it is assumed that 100 to 125 tons of soil will be treated during the course of the test. Under normal operations the soil would be characterized by the generator before being delivered to MCF. In this case the stockpiled soil will be evaluated at the MCF, and a sample collection strategy will be developed in the field to ensure

an accurate and representative characterization of the soil before treatment. Based on the tonnage to be treated during the test, three composite samples and one field duplicate sample should be adequate. In addition to the soil samples, one freshwater sample and one field duplicate sample will be collected during this first sampling event.

Either immediately following or near the end of the test a second sampling event will be completed, and this will include collection of samples of the thermally treated soil. Under normal operations MCF is required to segregate treated PFAS soil into 50-ton piles and collect one composite sample for each pile. The same procedure will be employed for this sampling event with up to three composite samples being collected from up to three (one sample from each) post-treatment stockpiles as well as one field duplicate sample. A sample of the blowdown water from the packed tower wet scrubber and one field duplicate sample will be collected during this sampling event. The wet scrubber blowdown sample will be collected while the facility is actively treating PFAS-contaminated soil to ensure the sample is representative of normal PFAS treatment operations.

APPENDIX B: Memo from Paul McGuire

HEDGEROW HILL
ENVIRONMENTAL CONSULTING

Memo

To: Jeff Ryan, EPA ORD

From: Paul McGuire, HHC

Date: May 19, 2020

Re: NRC/US Ecology Moose Creek Facility operations information from the October 13-16, 2019 U.S. EPA PFAS Thermal Treatment Emissions Characterization Study

The NRC/US Ecology Moose Creek Facility (MCF) has been approved by the Alaska Department of Environmental Conservation (ADEC) to thermally treat PFAS contaminated material and has been commercially remediating these materials since May of 2019. NRC/US Ecology has made the MCF available to the U.S. Environmental Protection Agency (EPA) Office of Research and Development (ORD) to conduct research regarding air emissions testing methods, air emissions characterization, and post-treatment soils characteristics. The first of these tests was completed in October of 2019. The following information is being provided in response to EPA ORD's request for additional information regarding facility operations in support of the October 2019 test.

Alaska Source Testing (AST) was contracted by EPA to complete the on-site portion of the source test and has produced a report summarizing the results of the source test titled Summary Report U.S. Environmental Protection Agency National Response Corporation Alaska, LLC. Moose Creek Facility Research and Development Testing PFAS Destruction Analysis and dated May 8, 2020. The operations information provided here was also incorporated into the AST report.

In the discussions between EPA and MCF management staff while planning for the test, it was agreed that the MCF would maintain typical operations during the air emissions data collection effort. This includes operational activities such as material preparation and handling, temperature settings, and plant operating configurations. As such, the results of the test can be considered representative of typical facility operations.

Because of the timing of the test it was not possible to evaluate multiple sources of PFAS-contaminated soil to select soil characteristics or levels of contamination based on how these parameters would impact the test. The MCF had received and had prepared a volume of PFAS-contaminated soil for thermal treatment that was above the ADEC clean-up levels (CULs) for regulated PFAS compounds (ADEC regulatory limits are currently 0.0030 mg/kg PFOS and 0.0017 mg/kg PFOA). It was this soil that was used for the test. Analysis showed that this soil came from sources where PFOS was the highest concentration of any one PFAS compound with levels ranging from 0.01 to 1.40 mg/kg with most sources being on the lower end of that range.

The MCF collects a variety of data as part of normal operations and as needed to meet regulatory compliance requirements. Data are collected at 1-minute intervals through a computerized Continuous Emission Monitoring System (CEMS). These data have been summarized here to establish baseline plant operations information specific to each air emissions data collection test

run. The complete CEMS reports are included as an attachment to this report. While a total of six test runs were completed, the three test runs where PFAS sampling for targeted, quantitative analyses (Runs 1, 3, and 5) are the subject of this memo, and operations data are provided for the 4-hour period associated with each run. Parameters for which operations data were collected include temperature from several points in the treatment system, CO, O_2, and contaminated material feed rate. Operation of the primary treatment kiln, including temperatures and other operating parameters, are considered proprietary and have not been included in this memo.

The following table provides a summary of the operations data collected for each test run 1, 3, and 5. All values in this table represent an average taken over the duration of each test run. While the MCF does use a belt scale to measure the rate material is fed into the kiln, that scale does not provide consistent accurate readings at these lower feed rates. Measured weights and calculations of the number of loader buckets of material placed into the feed hopper over a period of time were used to establish a relatively consistent feed rate of nominally 3.5 tons per hour (tph) into the kiln.

Operations Data Average Values

Parameter	Run 1	Run 3	Run 5
Afterburner Temp (°F)	1988	1937	1938
Stack Temp (°F)	157	159	159
CO Level (0-200 ppm)	0.89	1.26	2.16
O2 Level (0-25%)	15.8	12.5	11.5
Feed Rate (tph)	3.5	3.5	3.5

The following operations issues were noted during the test.

- The O_2 sampling line was frozen for the first 3 hours of test run 1.
- A heater that controls fog formation on the Continuous Opacity Monitoring System (COMS) mirrors failed resulting in out of compliance opacity readings for the duration of the test.
- A faulty flow meter resulted in an increase in the recirculation of the fluid in the wet scrubber. While the scrubber continued to operate within acceptable parameters, the concentration of contaminants in the scrubber liquid was higher than normal for typical operations.
- An anti-corrosion coating in the stack began to fail and may have deposited solids on the top of the mist eliminator in the wet scrubber. This could result in increased velocities through the mist eliminator, channeling of air flow, and water droplet formation in the stack.

As required by the ADEC-approved March 25, 2020 Moose Creek Thermal Treatment Facility Operations Plan, all PFAS-contaminated material must be tested for six PFAS compounds following thermal treatment and must not exceed the proposed CULs for each. The following table includes the six PFAS compounds and their respective CULs. The standards established

for the MCF are lower than the current ADEC statutory clean-up levels for PFOS and PFOA and include four additional PFAS compounds that are not currently regulated.

Proposed ADEC PFAS Cleanup Levels

Compound	CAS Number	Soil Migration To Groundwater (mg/kg)
Perfluorobutane Sulfonic Acid (PFBS)	375-73-5	1.4
Perfluoroheptanoic Acid (PFHpA)	375-85-9	0.00024
Perfluorohexane Sulfonic Acid (PFHxS)	355-46-4	0.00029
Perfluorononanoic Acid (PFNA)	375-95-1	0.00041
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	0.00053
Perfluorooctanoic Acid (PFOA)	335-67-1	0.00029

Samples are collected from each 50-ton pile of treated material, and 21 samples were collected from a total of 1,050 tons of soil treated over the course of the test. The post-treated analytical data do not corollate directly to any specific air emissions test run. Of the 21 samples collected one sample contained 0.00014 mg/kg PFOA, one sample contained 0.00025 mg/kg PFOS and five samples contained PFHpA at concentrations ranging from 0.00020 to 0.00025 mg/kg. All of these results were identified as "estimated values" by the laboratory and were accepted by ADEC as meeting the accepted standards for remediation.

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_13	13:00:08	143	21.75	0.19	7.48	2009	157	0.17	16.903
2019_10_13	13:01:08	143	21.91	0.21	7.49	2016	158	0.11	16.91
2019_10_13	13:02:08	143	29.87	0.2	7.48	2023	157	0.11	16.865
2019_10_13	13:03:08	143	22.03	0.18	7.48	2022	159	0.06	16.855
2019_10_13	13:04:08	143	27.99	0.2	7.48	2006	159	0.11	16.948
2019_10_13	13:05:08	143	28.38	0.22	7.48	2014	158	0.11	16.975
2019_10_13	13:06:08	142	29.5	0.23	7.48	2015	159	0.11	16.932
2019_10_13	13:07:08	142	21.82	0.23	7.48	2022	159	0.11	16.889
2019_10_13	13:08:08	143	21.75	0.22	7.48	2030	160	0.17	16.882
2019_10_13	13:09:08	142	29.79	0.19	7.47	2032	158	0.18	16.819
2019_10_13	13:10:08	143	28.49	0.24	7.47	2042	160	0.17	16.828
2019_10_13	13:11:08	143	29.76	0.23	7.48	2053	161	0.17	16.939
2019_10_13	13:12:08	142	29.32	0.25	7.48	2062	160	0.23	16.835
2019_10_13	13:13:08	142	28.39	0.26	7.48	2051	161	0.17	16.837
2019_10_13	13:14:08	142	30.22	0.27	7.48	2035	158	0.23	16.829
2019_10_13	13:15:08	143	28.49	0.28	7.48	2041	157	0.23	16.923
2019_10_13	13:16:08	143	22.96	0.1	7.49	2053	151	0.23	16.591
2019_10_13	13:17:08	143	22.66	0.03	7.49	2149	147	0.17	15.112
2019_10_13	13:18:08	142	21.89	0.37	7.47	2222	151	0.23	14.636
2019_10_13	13:19:08	143	21.86	0.37	7.45	2242	152	0.23	14.359
2019_10_13	13:20:08	142	21.99	0.36	7.4	2118	156	0.23	13.791
2019_10_13	13:21:08	143	28.09	0.34	7.37	2003	156	0.49	14.926
2019_10_13	13:22:08	144	27.93	0.33	7.39	1935	157	0.49	15.541
2019_10_13	13:23:08	143	28.03	0.33	7.41	1896	157	0.54	16.826
2019_10_13	13:24:08	143	22.53	0.33	7.43	1875	157	0.43	16.928
2019_10_13	13:25:08	142	27.39	0.35	7.44	1866	160	0.49	17.001
2019_10_13	13:26:08	142	27.93	0.32	7.45	1862	160	0.54	16.943
2019_10_13	13:27:08	142	22.42	0.28	7.45	1857	160	0.54	17.001
2019_10_13	13:28:08	143	22.7	0.23	7.46	1851	160	0.54	17.064
2019_10_13	13:29:08	143	21.55	0.24	7.46	1843	158	0.54	17.102
2019_10_13	13:30:08	142	22.09	0.19	7.46	1842	163	0.59	17.192
2019_10_13	13:31:08	143	21.91	0.17	7.47	1851	160	0.59	16.851
2019_10_13	13:32:08	142	22.92	0.13	7.47	1866	160	0.69	16.916
2019_10_13	13:33:08	143	22.32	0.11	7.47	1902	160	0.69	16.856
2019_10_13	13:34:08	143	28.56	0.12	7.47	1992	158	0.64	16.683
2019_10_13	13:35:08	143	23.27	0.14	7.46	2084	153	0.59	15.984
2019_10_13	13:36:08	142	21.65	0.18	7.45	2122	151	0.38	15.798
2019_10_13	13:37:08	143	22.41	0.14	7.44	2135	150	4.51	15.402
2019_10_13	13:38:08	143	21.91	0.12	7.44	2172	149	9.45	15.322
2019_10_13	13:39:08	143	23.03	0.13	7.44	2188	147	6.17	15.573
2019_10_13	13:40:08	143	23.09	0.13	7.44	2199	146	4.3	15.575
2019_10_13	13:41:08	142	23.16	0.11	7.44	2198	142	4.09	15.638
2019_10_13	13:42:08	143	23.36	0.14	7.44	2209	142	6.38	15.726
2019_10_13	13:43:08	143	22.69	0.16	7.45	2210	142	16.19	15.658
2019_10_13	13:44:08	142	23.35	0.16	7.45	2222	141	20.19	15.622
2019_10_13	13:45:08	143	23.39	0.18	7.45	2246	142	17.67	15.591
2019_10_13	13:46:08	143	23.03	0.12	7.45	2250	144	15.11	15.494
2019_10_13	13:47:08	143	22.89	0.12	7.45	2264	146	12.69	15.506
2019_10_13	13:48:08	143	23.08	0.08	7.45	2302	152	9.87	15.622
2019_10_13	13:49:08	143	23.32	0.09	7.46	2319	155	7.06	15.739
2019_10_13	13:50:08	143	23.36	0.1	7.44	2246	156	4.46	16.901
2019_10_13	13:51:08	143	22.93	0.16	7.42	2165	155	2.05	16.815
2019_10_13	13:52:08	142	23.12	0.19	7.4	2117	159	0.85	16.781
2019_10_13	13:53:08	143	23.2	0.21	7.4	2094	159	0.49	16.936
2019_10_13	13:54:08	143	23.31	0.23	7.4	2069	162	0.43	16.945
2019_10_13	13:55:08	142	23.26	0.23	7.4	2040	160	0.38	16.961
2019_10_13	13:56:08	143	22.56	0.18	7.4	2039	158	0.38	17.076
2019_10_13	13:57:08	142	22.52	0.13	7.41	2014	160	0.33	17.193
2019_10_13	13:58:08	142	23.12	0.13	7.41	2001	158	0.33	17.168
2019_10_13	13:59:08	142	23.32	0.12	7.42	1998	158	0.28	17.226
2019_10_13	14:00:08	142	23.35	0.14	7.42	1999	158	0.28	17.246
2019_10_13	14:01:08	142	23.16	0.15	7.42	1992	158	0.28	17.329
2019_10_13	14:02:08	143	23.12	0.13	7.41	1976	160	0.28	17.334
2019_10_13	14:03:08	142	23.27	0.11	7.42	1960	156	0.28	17.323
2019_10_13	14:04:08	142	22.26	0.12	7.41	1953	153	0.23	16.815
2019_10_13	14:05:08	142	22.26	0.11	7.4	1942	152	0.28	17.053
2019_10_13	14:06:08	143	22.29	0.13	7.38	1943	157	0.23	17.199
2019_10_13	14:07:08	142	22.3	0.15	7.37	1938	157	0.28	17.341
2019_10_13	14:08:08	142	22.49	0.16	7.36	1944	157	0.28	17.352
2019_10_13	14:09:08	143	22.38	0.17	7.36	1945	158	0.23	17.397
2019_10_13	14:10:08	143	22.76	0.17	7.36	1950	160	0.28	17.462
2019_10_13	14:11:08	137	22.69	0.12	7.35	1961	156	0.17	17.43
2019_10_13	14:12:08	140	22.6	0.1	7.36	1957	152	0.18	17.157
2019_10_13	14:13:08	144	28.18	0.15	7.35	1952	152	0.17	16.916
2019_10_13	14:14:08	143	28.11	0.18	7.34	1951	151	0.17	16.674
2019_10_13	14:15:08	143	27.86	0.2	7.32	1944	155	0.17	17.231

2019_10_13	14:16:08	131	28.16	0.2	7.3	1946	156	0.18	17.46
2019_10_13	14:17:08	127	29.16	0.2	7.3	1951	157	0.17	17.493
2019_10_13	14:18:08	144	29.32	0.22	7.29	1960	158	0.17	17.556
2019_10_13	14:19:08	143	29.12	0.21	7.29	1961	157	0.17	17.503
2019_10_13	14:20:08	144	28.92	0.13	7.29	1960	157	0.18	17.514
2019_10_13	14:21:08	143	29.26	0.17	7.28	1958	158	0.12	17.538
2019_10_13	14:22:08	144	28.99	0.21	7.27	1951	158	0.12	17.626
2019_10_13	14:23:08	144	28.92	0.23	7.27	1945	158	0.12	17.653
2019_10_13	14:24:08	144	28.89	0.26	7.28	1942	160	0.11	17.736
2019_10_13	14:25:08	137	28.92	0.21	7.28	1937	158	0.18	17.65
2019_10_13	14:26:08	138	29.3	0.22	7.28	1942	157	0.11	17.644
2019_10_13	14:27:08	138	29.46	0.2	7.28	1944	157	0.18	17.72
2019_10_13	14:28:08	138	29.66	0.16	7.27	1933	155	0.17	17.756
2019_10_13	14:29:08	138	30.02	0.16	7.27	1936	155	0.18	17.704
2019_10_13	14:30:08	138	29.63	0.05	7.26	1951	153	0.12	17.714
2019_10_13	14:31:08	138	28.83	0.03	7.26	1939	149	0.18	17.289
2019_10_13	14:32:08	137	29.07	0.01	7.26	1942	151	0.17	16.718
2019_10_13	14:33:08	138	29.32	0.08	7.24	1940	151	0.18	17.15
2019_10_13	14:34:08	138	29.32	0.13	7.23	1937	155	0.18	17.494
2019_10_13	14:35:08	137	29.39	0.15	7.22	1925	155	0.12	17.157
2019_10_13	14:36:08	138	29.43	0.15	7.22	1929	155	0.11	17.841
2019_10_13	14:37:08	137	29.43	0.16	7.22	1930	155	0.12	17.776
2019_10_13	14:38:08	138	29.53	0.1	7.21	1929	155	0.12	17.527
2019_10_13	14:39:08	137	29.59	0.13	7.21	1931	155	0.12	17.662
2019_10_13	14:40:08	139	29.59	0.12	7.2	1922	155	0.11	17.675
2019_10_13	14:41:08	137	29.66	0.1	7.2	1913	155	0.11	17.684
2019_10_13	14:42:08	138	29.7	0.13	7.2	1921	156	0.12	17.794
2019_10_13	14:43:08	138	29.66	0.14	7.19	1918	156	0.11	17.79
2019_10_13	14:44:08	139	29.29	0.16	7.19	1919	155	0.11	17.704
2019_10_13	14:45:08	139	29.26	0.13	7.19	1911	155	0.18	17.759
2019_10_13	14:46:08	139	29.15	0.15	7.18	1905	155	0.12	17.738
2019_10_13	14:47:08	140	29.19	0.13	7.18	1906	156	0.18	17.817
2019_10_13	14:48:08	139	28.28	0.13	7.18	1900	157	0.18	17.898
2019_10_13	14:49:08	143	28.59	0.14	7.18	1892	156	0.17	17.943
2019_10_13	14:50:08	143	28.08	0.13	7.17	1883	155	0.23	17.907
2019_10_13	14:51:08	144	27.67	0.16	7.17	1871	156	0.23	17.954
2019_10_13	14:52:08	144	27.14	0.2	7.16	1864	157	0.23	17.954
2019_10_13	14:53:08	143	26.51	0.22	7.16	1858	156	0.23	17.905
2019_10_13	14:54:08	143	26.33	0.23	7.16	1854	157	0.23	17.927
2019_10_13	14:55:08	144	26.35	0.23	7.16	1853	158	0.23	17.972
2019_10_13	14:56:08	143	26.24	0.22	7.15	1881	160	0.23	18.084
2019_10_13	14:57:08	142	26.35	0.17	7.16	1918	160	0.28	18.075
2019_10_13	14:58:08	145	26.26	0.2	7.15	1950	160	0.28	18.048
2019_10_13	14:59:08	144	26.37	0.22	7.15	1973	160	0.28	17.974
2019_10_13	15:00:08	144	26.36	0.17	7.15	1984	160	0.38	16.373
2019_10_13	15:01:08	144	25.83	0.16	7.15	1986	158	0.38	16.474
2019_10_13	15:02:08	145	25.12	0.17	7.15	1990	160	0.38	16.779
2019_10_13	15:03:08	144	26.36	0.15	7.16	1987	160	0.33	16.691
2019_10_13	15:04:08	143	26.33	0.11	7.16	1975	161	0.28	16.764
2019_10_13	15:05:08	144	23.94	0.08	7.17	1978	158	0.28	17.042
2019_10_13	15:06:08	144	26.29	0.06	7.18	1989	159	0.28	17.114
2019_10_13	15:07:08	144	26.19	0.09	7.19	1986	160	0.28	17.163
2019_10_13	15:08:08	143	26.4	0.1	7.2	1967	160	0.28	17.224
2019_10_13	15:09:08	143	26.22	0.14	7.2	1967	158	0.28	17.251
2019_10_13	15:10:08	144	26.4	0.16	7.21	1965	160	0.28	17.41
2019_10_13	15:11:08	144	19.26	0.14	7.23	1947	158	0.28	17.453
2019_10_13	15:12:08	144	26.09	0.1	7.23	1971	158	0.28	17.502
2019_10_13	15:13:08	144	25.5	0.08	7.24	1977	158	0.23	17.541
2019_10_13	15:14:08	143	26.49	0.04	7.25	1974	160	0.28	17.525
2019_10_13	15:15:08	143	26.43	0.12	7.25	1976	160	0.28	17.485
2019_10_13	15:16:08	142	26.49	0.13	7.26	1980	161	0.23	17.568
2019_10_13	15:17:08	143	26.4	0.1	7.27	1989	160	0.23	17.579
2019_10_13	15:18:08	144	26.44	0.1	7.28	1988	160	0.23	17.61
2019_10_13	15:19:08	144	26.44	0.14	7.29	1986	160	0.23	17.731
2019_10_13	15:20:08	143	26.4	0.15	7.3	1989	160	0.28	17.734
2019_10_13	15:21:08	143	26.07	0.14	7.3	1995	160	0.33	17.271
2019_10_13	15:22:08	144	26.48	0.16	7.31	1976	160	0.38	17.188
2019_10_13	15:23:08	140	26.67	0.19	7.31	1990	161	0.33	17.246
2019_10_13	15:24:08	141	26.71	0.16	7.31	1998	158	0.28	17.249
2019_10_13	15:25:08	141	25.74	0.13	7.31	2002	158	0.28	17.224
2019_10_13	15:26:08	143	26.78	0.12	7.31	2013	160	0.28	17.231
2019_10_13	15:27:08	142	26.33	0.14	7.31	2014	158	0.28	17.224
2019_10_13	15:28:08	143	27.1	0.11	7.31	2009	157	0.23	17.195
2019_10_13	15:29:08	142	26.78	0.15	7.31	1998	157	0.28	17.266
2019_10_13	15:30:08	142	26.87	0.15	7.31	2002	156	0.28	17.356
2019_10_13	15:31:08	142	26.67	0.06	7.31	1996	158	0.23	17.298
2019_10_13	15:32:08	142	22.04	0.06	7.31	1996	157	0.28	17.287
2019_10_13	15:33:08	141	26.84	0.09	7.31	1983	156	0.23	17.37

2019_10_13	15:34:08	142	23.91	0.12	7.32	1977	156	0.28	17.213
2019_10_13	15:35:08	143	26.83	0.15	7.32	1974	157	0.28	17.642
2019_10_13	15:36:08	142	24.81	0.17	7.32	1973	157	0.28	17.491
2019_10_13	15:37:08	142	27.07	0.17	7.32	1974	157	0.28	17.55
2019_10_13	15:38:08	141	26.8	0.19	7.32	1968	158	0.33	17.001
2019_10_13	15:39:08	143	21.63	0.21	7.32	1984	158	0.38	17.633
2019_10_13	15:40:08	142	24.88	0.19	7.32	1986	160	0.34	17.803
2019_10_13	15:41:08	142	26.81	0.14	7.32	1974	158	0.38	17.57
2019_10_13	15:42:08	142	26.2	0.12	7.32	1960	158	0.34	17.455
2019_10_13	15:43:08	142	26.76	0.07	7.33	1956	158	0.34	17.507
2019_10_13	15:44:08	142	25.43	0.05	7.33	1950	160	0.38	17.547
2019_10_13	15:45:08	142	26.71	0.06	7.33	1939	158	0.38	17.621
2019_10_13	15:46:08	142	26.74	0.06	7.34	1947	158	0.38	16.015
2019_10_13	15:47:08	143	26.78	0.16	7.34	1951	160	0.28	20.69
2019_10_13	15:48:08	142	19.5	0.15	7.35	1944	160	0.12	20.73
2019_10_13	15:49:08	142	26.63	0.15	7.35	1949	160	0.07	20.753
2019_10_13	15:50:08	143	27.11	0.11	7.36	1959	160	0.12	20.719
2019_10_13	15:51:08	141	26.6	0.15	7.36	1978	160	0.06	20.728
2019_10_13	15:52:08	142	26.8	0.19	7.36	1998	160	0.33	20.703
2019_10_13	15:53:08	142	26.6	0.26	7.36	2002	163	0.54	20.708
2019_10_13	15:54:08	142	26.56	0.26	7.35	2011	158	0.28	20.707
2019_10_13	15:55:08	142	26.64	0.29	7.35	2018	160	0.38	17.46
2019_10_13	15:56:08	142	26.57	0.3	7.35	2015	159	0.38	20.631
2019_10_13	15:57:08	142	26.6	0.33	7.35	2011	158	0.33	20.685
2019_10_13	15:58:08	143	26.74	0.31	7.34	2007	157	0.18	20.719
2019_10_13	15:59:08	142	26.56	0.3	7.35	2028	158	0.17	20.723
2019_10_13	16:00:08	142	26.53	0.29	7.35	2016	159	0.17	20.735
2019_10_13	16:01:08	142	26.63	0.25	7.35	2009	159	0.11	20.73
2019_10_13	16:02:08	142	26.71	0.23	7.35	1998	157	0.07	20.744
2019_10_13	16:03:08	142	26.62	0.18	7.35	2004	160	0.06	20.739
2019_10_13	16:04:08	142	26.37	0.19	7.36	2008	159	0.07	20.746
2019_10_13	16:05:08	142	26.67	0.22	7.36	2006	159	0.12	12.576
2019_10_13	16:06:08	142	26.09	0.25	7.36	1997	160	0.69	12.384
2019_10_13	16:07:08	142	25.9	0.29	7.37	2000	160	0.65	12.439
2019_10_13	16:08:08	142	26.76	0.27	7.37	2000	160	0.59	12.19
2019_10_13	16:09:08	142	26.83	0.24	7.37	2000	159	0.59	12.143
2019_10_13	16:10:08	142	26.49	0.24	7.37	1982	159	0.65	12.323
2019_10_13	16:11:08	142	26.49	0.22	7.37	1968	159	0.7	12.541
2019_10_13	16:12:08	142	26.56	0.18	7.37	1969	159	0.75	12.451
2019_10_13	16:13:08	142	26.63	0.19	7.38	1961	159	0.75	12.491
2019_10_13	16:14:08	141	26.45	0.2	7.38	1961	160	0.7	12.455
2019_10_13	16:15:08	142	26.6	0.18	7.38	1973	159	0.65	12.557
2019_10_13	16:16:08	142	26.53	0.18	7.39	1977	159	0.7	12.591
2019_10_13	16:17:08	142	26.72	0.19	7.39	1985	160	0.64	12.552
2019_10_13	16:18:08	142	26.52	0.2	7.39	2001	160	0.59	12.582
2019_10_13	16:19:08	141	26.46	0.18	7.39	1998	158	0.54	13.163
2019_10_13	16:20:08	141	26.52	0.17	7.39	1998	159	0.54	13.404
2019_10_13	16:21:08	142	26.83	0.14	7.4	2022	159	0.54	13.005
2019_10_13	16:22:08	141	27.11	0.12	7.41	2039	159	0.49	12.924
2019_10_13	16:23:08	142	27.15	0.11	7.42	2039	160	0.49	12.91
2019_10_13	16:24:08	142	27.35	0.14	7.42	2031	159	0.43	12.871
2019_10_13	16:25:08	141	27.47	0.14	7.43	2026	159	0.43	13.185
2019_10_13	16:26:08	142	27.53	0.15	7.43	2027	158	0.43	13.31
2019_10_13	16:27:08	142	27.86	0.17	7.44	2022	159	0.43	13.425
2019_10_13	16:28:08	142	27.86	0.18	7.45	2017	160	0.43	13.53
2019_10_13	16:29:08	142	28.09	0.21	7.45	2016	160	0.43	13.57
2019_10_13	16:30:08	142	28.29	0.23	7.45	2026	159	0.43	13.723
2019_10_13	16:31:08	142	28.26	0.22	7.46	2034	160	0.43	13.541
2019_10_13	16:32:08	142	28.49	0.25	7.46	2022	160	0.43	13.58
2019_10_13	16:33:08	142	28.67	0.26	7.47	2039	160	0.43	13.563
2019_10_13	16:34:08	142	52.84	0.26	7.47	2035	160	0.43	13.765
2019_10_13	16:35:08	142	37.04	0.26	7.48	2038	160	0.43	13.331
2019_10_13	16:36:08	141	41.99	0.22	7.48	2043	160	0.43	13.229
2019_10_13	16:37:08	142	38.46	0.2	7.49	2037	162	0.54	12.836
2019_10_13	16:38:08	142	35.71	0.2	7.49	2037	160	0.59	13.01
2019_10_13	16:39:08	141	45.72	0.2	7.5	2030	162	0.49	12.98
2019_10_13	16:40:08	142	41.6	0.18	7.51	2021	162	0.59	12.849
2019_10_13	16:41:08	142	44.85	0.18	7.51	2011	163	0.59	12.939
2019_10_13	16:42:08	142	42.47	0.18	7.52	2008	162	0.54	12.982
2019_10_13	16:43:08	142	42.47	0.18	7.52	2008	162	0.54	12.987
2019_10_13	16:44:08	141	41.79	0.14	7.53	2003	160	0.54	12.809
2019_10_13	16:45:08	142	41.33	0.15	7.53	1999	160	0.59	12.948
2019_10_13	16:46:08	141	30.48	0.16	7.53	1987	162	0.54	12.926
2019_10_13	16:47:08	142	30.05	0.16	7.54	1987	162	0.54	12.946
2019_10_13	16:48:08	142	29.5	0.18	7.55	1982	159	0.54	12.833
2019_10_13	16:49:08	141	29	0.18	7.55	1978	160	0.59	12.713
2019_10_13	16:50:08	142	30.95	0.16	7.56	1983	161	0.59	12.759
2019_10_13	16:51:08	141	31.09	0.17	7.56	1995	159	0.59	13.015

2019_10_13	16:52:08	141	31.32	0.18	7.57	1991	161	0.54	13.223
2019_10_13	16:53:08	142	31.69	0.2	7.57	1995	160	0.54	13.442
2019_10_13	16:54:08	141	31.72	0.19	7.57	1999	158	0.59	13.387
2019_10_13	16:55:08	142	29.47	0.18	7.57	2002	158	0.54	13.494
2019_10_13	16:56:08	142	28.53	0.13	7.56	2004	154	0.54	13.537
2019_10_13	16:57:08	142	28.57	0.15	7.56	2006	156	0.54	12.79
2019_10_13	16:58:08	142	28.83	0.15	7.54	2009	158	0.59	12.551
2019_10_13	16:59:08	142	28.8	0.17	7.52	1999	160	0.75	12.668
2019_10_13	17:00:08	142	21.77	0.14	7.52	1977	159	0.75	12.819
2019_10_13	17:01:08	142	21.95	0.14	7.52	1964	161	0.59	12.905
2019_10_13	17:02:08	142	20.32	0.16	7.52	1949	162	0.59	12.936
2019_10_13	17:03:08	142	20.38	0.16	7.52	1926	162	0.54	13.002
2019_10_13	17:04:08	142	21.95	0.14	7.53	1920	162	0.54	13.118
2019_10_13	17:05:08	143	19.36	0.14	7.53	1909	160	0.54	13.181
2019_10_13	17:06:08	141	18.73	0.13	7.54	1905	162	0.59	13.196
2019_10_13	17:07:08	142	19.6	0.13	7.54	1901	161	0.64	12.96
2019_10_13	17:08:08	142	21.12	0.12	7.54	1914	161	0.9	12.927
2019_10_13	17:09:08	142	19.27	0.14	7.53	1924	161	1	12.579
2019_10_13	17:10:08	141	21.47	0.13	7.53	1941	161	1.17	12.51
2019_10_13	17:11:08	142	21.95	0.11	7.53	1953	162	1.01	12.698
2019_10_13	17:12:08	142	18.62	0.12	7.52	1949	161	0.91	12.689
2019_10_13	17:13:08	142	20.61	0.14	7.52	1948	161	0.91	12.536
2019_10_13	17:14:08	142	23.82	0.12	7.52	1950	161	0.96	12.373
2019_10_13	17:15:08	141	21.76	0.11	7.52	1958	161	0.85	12.431
2019_10_13	17:16:08	142	19.6	0.12	7.52	1953	161	0.86	12.19
2019_10_13	17:17:08	141	18.66	0.12	7.53	1959	162	0.85	12.474
2019_10_13	17:18:08	142	18.57	0.1	7.53	1958	163	0.8	12.444
2019_10_13	17:19:08	142	24.1	0.13	7.54	1965	162	0.85	12.391
2019_10_13	17:20:08	141	20.57	0.13	7.54	1972	161	0.95	12.397
2019_10_13	17:21:08	141	19.6	0.12	7.54	1968	161	0.91	12.455
2019_10_13	17:22:08	142	21.96	0.12	7.54	1956	162	0.8	12.513
2019_10_13	17:23:08	142	29.53	0.11	7.55	1973	161	0.75	12.6
2019_10_13	17:24:08	142	29.73	0.12	7.55	1952	161	0.8	12.599
2019_10_13	17:25:08	142	29.59	0.13	7.56	1958	161	0.8	12.394
2019_10_13	17:26:08	141	29.66	0.11	7.56	1954	160	0.75	12.512
2019_10_13	17:27:08	141	30.09	0.09	7.56	1954	161	0.8	12.441
2019_10_13	17:28:08	142	29.97	0.1	7.57	1951	161	0.85	12.592
2019_10_13	17:29:08	142	28.02	0.12	7.57	1949	161	0.85	12.512
2019_10_13	17:30:08	142	30.09	0.13	7.57	1946	161	0.8	12.553
2019_10_13	17:31:08	142	30.87	0.13	7.58	1959	161	0.8	12.502
2019_10_13	17:32:08	141	30.33	0.11	7.58	1948	160	0.85	12.427
2019_10_13	17:33:08	141	29.5	0.14	7.58	1949	160	0.8	12.432
2019_10_13	17:34:08	142	29.66	0.13	7.58	1938	162	0.8	12.658
2019_10_13	17:35:08	141	21.71	0.12	7.58	1944	160	0.85	12.615
2019_10_13	17:36:08	141	21.37	0.12	7.59	1943	161	0.91	12.623
2019_10_13	17:37:08	141	21.95	0.12	7.59	1944	161	0.96	12.533
2019_10_13	17:38:08	142	21.75	0.14	7.59	1947	161	0.96	12.479
2019_10_13	17:39:08	141	21.35	0.14	7.6	1941	161	1	12.545
2019_10_13	17:40:08	142	21.47	0.14	7.6	1947	161	0.96	12.654
2019_10_13	17:41:08	141	30.64	0.14	7.6	1957	162	1.06	12.695

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_14	16:30:09	140	53.47	0.16	7.38	2012	158	1.47	12.123
2019_10_14	16:31:09	141	53.99	0.15	7.38	2003	161	1.57	11.715
2019_10_14	16:32:09	141	53.8	0.14	7.37	1999	160	1.58	12.053
2019_10_14	16:33:09	141	51.17	0.12	7.37	1996	158	1.41	11.988
2019_10_14	16:34:09	141	51.84	0.12	7.35	2003	160	1.42	11.804
2019_10_14	16:35:09	141	50.79	0.14	7.36	2023	160	1.52	11.95
2019_10_14	16:36:09	141	48.35	0.16	7.36	2020	160	1.47	11.823
2019_10_14	16:37:09	141	50.26	0.13	7.36	2040	162	1.47	11.663
2019_10_14	16:38:09	141	53.47	0.12	7.36	2051	161	1.42	11.948
2019_10_14	16:39:09	141	53.83	0.16	7.36	2004	158	1.37	11.208
2019_10_14	16:40:09	141	52.16	0.13	7.35	2015	162	1.42	11.51
2019_10_14	16:41:09	141	53.68	0.16	7.36	2021	161	1.57	12.027
2019_10_14	16:42:09	140	54.25	0.16	7.36	1982	160	1.57	11.683
2019_10_14	16:43:09	141	52.08	0.14	7.34	1968	160	1.47	11.695
2019_10_14	16:44:09	141	55.11	0.12	7.35	2015	163	1.68	11.974
2019_10_14	16:45:09	141	53.91	0.16	7.36	2022	162	1.63	12.128
2019_10_14	16:46:09	141	53.87	0.14	7.36	2022	160	1.47	11.557
2019_10_14	16:47:09	140	51.5	0.16	7.36	1991	159	1.42	11.73
2019_10_14	16:48:09	140	52.67	0.12	7.35	2002	160	1.37	11.54
2019_10_14	16:49:09	141	53.67	0.13	7.35	2002	160	1.53	12.11
2019_10_14	16:50:09	140	53.8	0.15	7.35	1956	158	1.47	11.832
2019_10_14	16:51:09	141	53.8	0.11	7.35	1976	162	1.42	11.752
2019_10_14	16:52:09	140	54.1	0.12	7.36	1981	159	1.63	12.512
2019_10_14	16:53:09	140	54.27	0.12	7.36	1960	159	1.53	12.067
2019_10_14	16:54:09	141	54.26	0.08	7.36	1983	160	1.42	11.916
2019_10_14	16:55:09	141	54.41	0.12	7.36	1964	159	1.52	12.103
2019_10_14	16:56:09	141	54.73	0.15	7.35	1940	156	1.42	11.899
2019_10_14	16:57:09	141	54.68	0.11	7.35	1959	159	1.47	12.05
2019_10_14	16:58:09	141	54.53	0.11	7.36	1962	158	1.58	12.416
2019_10_14	16:59:09	141	54.53	0.15	7.35	1947	154	1.52	11.925
2019_10_14	17:00:09	141	52.43	0.12	7.35	1969	160	1.47	12.208
2019_10_14	17:01:09	141	52.43	0.12	7.36	1990	163	1.68	12.459
2019_10_14	17:02:09	140	52.78	0.11	7.39	1996	163	1.73	11.891
2019_10_14	17:03:09	141	53.08	0.15	7.39	1977	162	2	11.781
2019_10_14	17:04:09	141	53.08	0.15	7.37	1972	160	1.73	11.885
2019_10_14	17:05:09	140	53.08	0.14	7.37	1962	162	1.58	12.184
2019_10_14	17:06:09	141	53.08	0.15	7.37	1956	162	1.42	12.135
2019_10_14	17:07:09	141	53.08	0.15	7.37	1951	162	1.42	12.015
2019_10_14	17:08:09	140	53.08	0.14	7.37	1950	160	1.42	12.189
2019_10_14	17:09:09	141	53.08	0.15	7.37	1951	160	1.58	12.157
2019_10_14	17:10:09	140	53.08	0.13	7.37	1944	162	1.52	12.082
2019_10_14	17:11:09	141	53.08	0.12	7.37	1945	160	1.41	11.965
2019_10_14	17:12:09	140	53.08	0.13	7.37	1938	160	1.42	12.189
2019_10_14	17:13:09	141	53.08	0.13	7.38	1944	160	1.41	12.232
2019_10_14	17:14:09	140	53.08	0.15	7.38	1950	159	1.37	12.475
2019_10_14	17:15:09	141	53.08	0.16	7.38	1981	159	1.32	12.099
2019_10_14	17:16:09	141	53.08	0.15	7.38	1991	158	1.32	12.626
2019_10_14	17:17:09	141	53.08	0.15	7.38	1986	158	1.32	12.286
2019_10_14	17:18:09	140	53.08	0.13	7.38	1993	158	1.21	12.246
2019_10_14	17:19:09	141	53.08	0.12	7.38	1990	159	1.21	12.252
2019_10_14	17:20:09	140	53.09	0.16	7.38	1989	158	1.21	12.294
2019_10_14	17:21:09	141	53.08	0.15	7.38	1988	158	1.16	12.373
2019_10_14	17:22:09	141	53.08	0.17	7.38	1980	158	1.21	12.338
2019_10_14	17:23:09	141	53.08	0.15	7.38	1986	159	1.21	12.319
2019_10_14	17:24:09	140	53.08	0.16	7.38	1978	160	1.21	12.359
2019_10_14	17:25:09	142	53.08	0.16	7.38	1981	162	1.21	12.212
2019_10_14	17:26:09	140	53.08	0.18	7.38	1973	160	1.21	12.397
2019_10_14	17:27:09	140	53.08	0.17	7.37	1967	159	1.21	12.257
2019_10_14	17:28:09	140	53.08	0.18	7.37	1963	162	1.27	12.458
2019_10_14	17:29:09	140	53.08	0.16	7.38	1954	160	1.21	12.38
2019_10_14	17:30:09	140	53.09	0.17	7.38	1950	159	1.26	12.22
2019_10_14	17:31:09	141	53.08	0.15	7.38	1948	162	1.26	12.557
2019_10_14	17:32:09	141	53.09	0.14	7.38	1941	159	1.21	12.351
2019_10_14	17:33:09	140	53.09	0.16	7.38	1941	162	1.26	12.474
2019_10_14	17:34:09	141	53.09	0.16	7.38	1945	162	1.27	12.389
2019_10_14	17:35:09	141	53.09	0.15	7.38	1938	158	1.26	12.396
2019_10_14	17:36:09	141	53.09	0.17	7.38	1942	161	1.26	12.837
2019_10_14	17:37:09	139	53.09	0.17	7.38	1948	162	1.21	12.432
2019_10_14	17:38:09	141	53.09	0.17	7.38	1945	160	1.27	12.37
2019_10_14	17:39:09	141	53.09	0.14	7.38	1935	161	1.32	12.339
2019_10_14	17:40:09	140	53.09	0.16	7.38	1950	160	1.32	12.365
2019_10_14	17:41:09	140	53.09	0.13	7.39	1948	161	1.32	12.41
2019_10_14	17:42:09	140	53.09	0.14	7.38	1947	160	1.27	12.422
2019_10_14	17:43:09	140	53.06	0.14	7.38	1942	159	1.32	12.208
2019_10_14	17:44:09	140	56.5	0.17	7.38	1929	162	1.37	12.345
2019_10_14	17:45:09	140	29.75	0.14	7.38	1926	162	1.32	12.347

2019_10_14	17:46:09	140	29.98	0.17	7.39	1925	159	1.42	12.864
2019_10_14	17:47:09	141	29.02	0.15	7.39	1923	161	1.27	12.537
2019_10_14	17:48:09	141	29.38	0.15	7.39	1917	158	1.32	12.42
2019_10_14	17:49:09	141	28.24	0.13	7.39	1925	159	1.32	12.538
2019_10_14	17:50:09	141	29.6	0.12	7.39	1926	160	1.37	12.37
2019_10_14	17:51:09	140	27.36	0.11	7.39	1923	160	1.37	12.868
2019_10_14	17:52:09	141	30.07	0.14	7.39	1924	159	1.32	12.553
2019_10_14	17:53:09	141	28.36	0.16	7.39	1922	160	1.32	12.6
2019_10_14	17:54:09	140	30.07	0.16	7.39	1915	159	1.37	12.512
2019_10_14	17:55:09	141	30.11	0.13	7.39	1905	159	1.37	12.635
2019_10_14	17:56:09	141	30.18	0.15	7.39	1916	159	1.42	12.604
2019_10_14	17:57:09	140	30.15	0.17	7.39	1903	159	1.47	12.791
2019_10_14	17:58:09	141	30.18	0.17	7.4	1896	159	1.42	12.567
2019_10_14	17:59:09	141	30.18	0.14	7.4	1889	161	1.47	12.803
2019_10_14	18:00:09	141	30.22	0.13	7.41	1890	159	1.42	12.958
2019_10_14	18:01:09	140	30.25	0.13	7.41	1887	160	1.41	13.321
2019_10_14	18:02:09	141	30.29	0.11	7.42	1887	161	1.32	13.028
2019_10_14	18:03:09	140	30.14	0.12	7.42	1883	160	1.41	12.976
2019_10_14	18:04:09	141	30.22	0.12	7.43	1887	159	1.37	12.897
2019_10_14	18:05:09	141	30.25	0.12	7.42	1886	159	1.37	12.709
2019_10_14	18:06:09	140	30.29	0.12	7.41	1880	162	1.47	12.661
2019_10_14	18:07:09	141	30.14	0.14	7.41	1886	161	1.41	12.562
2019_10_14	18:08:09	141	30.18	0.12	7.4	1871	162	1.47	12.509
2019_10_14	18:09:09	140	30.02	0.13	7.4	1874	161	1.63	12.714
2019_10_14	18:10:09	141	30.02	0.17	7.41	1878	161	1.73	12.762
2019_10_14	18:11:09	140	29.91	0.15	7.42	1875	161	1.63	13.032
2019_10_14	18:12:09	141	29.17	0.16	7.42	1867	160	1.52	12.896
2019_10_14	18:13:09	140	29.67	0.14	7.42	1884	160	1.52	13.125
2019_10_14	18:14:09	141	29.58	0.11	7.42	1892	160	1.41	12.9
2019_10_14	18:15:09	140	29.4	0.11	7.41	1899	158	1.41	12.751
2019_10_14	18:16:09	140	29.12	0.11	7.4	1888	158	1.41	12.7
2019_10_14	18:17:09	140	29.38	0.12	7.4	1880	158	1.62	12.601
2019_10_14	18:18:09	141	29.36	0.09	7.4	1887	158	1.57	12.686
2019_10_14	18:19:09	141	29.14	0.1	7.39	1885	158	1.57	13.038
2019_10_14	18:20:09	140	29.17	0.1	7.39	1881	158	1.41	12.757
2019_10_14	18:21:09	141	28.21	0.11	7.39	1885	158	1.52	12.697
2019_10_14	18:22:09	140	28.94	0.12	7.39	1874	158	1.47	12.797
2019_10_14	18:23:09	141	28.84	0.13	7.39	1875	157	1.47	12.791
2019_10_14	18:24:09	141	27.67	0.14	7.39	1878	157	1.52	12.919
2019_10_14	18:25:09	140	28.37	0.11	7.39	1866	158	1.47	12.842
2019_10_14	18:26:09	140	26.9	0.09	7.39	1860	160	1.47	12.959
2019_10_14	18:27:09	140	28.47	0.09	7.39	1860	158	1.47	12.775
2019_10_14	18:28:09	141	28.37	0.12	7.38	1852	158	1.47	12.705
2019_10_14	18:29:09	140	28.34	0.11	7.38	1840	160	1.52	12.787
2019_10_14	18:30:09	141	28	0.12	7.39	1846	160	1.57	13.158
2019_10_14	18:31:09	140	28.1	0.11	7.39	1848	160	1.57	12.965
2019_10_14	18:32:09	141	28.01	0.14	7.38	1846	158	1.63	12.711
2019_10_14	18:33:09	141	27.95	0.2	7.38	1847	158	1.58	12.867
2019_10_14	18:34:09	141	27.54	0.22	7.38	1841	158	1.68	13.103
2019_10_14	18:35:09	141	27.56	0.2	7.38	1861	158	1.52	12.853
2019_10_14	18:36:09	141	27.64	0.2	7.38	1894	160	1.57	12.833
2019_10_14	18:37:09	141	27.56	0.2	7.37	1908	160	1.52	12.482
2019_10_14	18:38:09	141	27.47	0.17	7.37	1922	158	1.52	12.743
2019_10_14	18:39:09	141	24.78	0.16	7.36	1917	158	1.37	12.606
2019_10_14	18:40:09	140	21.66	0.16	7.36	1922	158	1.47	12.61
2019_10_14	18:41:09	141	22.25	0.15	7.36	1920	158	1.47	12.6
2019_10_14	18:42:09	141	22.7	0.13	7.36	1928	158	1.47	12.538
2019_10_14	18:43:09	141	27.54	0.13	7.36	1913	158	1.52	12.82
2019_10_14	18:44:09	140	19.75	0.15	7.36	1918	158	1.46	12.786
2019_10_14	18:45:09	141	20.33	0.14	7.36	1925	158	1.47	12.822
2019_10_14	18:46:09	141	24.26	0.16	7.36	1915	158	1.47	12.367
2019_10_14	18:47:09	142	24.85	0.16	7.35	1907	156	1.47	12.822
2019_10_14	18:48:09	141	24.06	0.17	7.35	1907	157	1.41	12.95
2019_10_14	18:49:09	141	20.6	0.16	7.36	1925	157	1.47	12.798
2019_10_14	18:50:09	141	26.56	0.18	7.35	1940	156	1.42	12.486
2019_10_14	18:51:09	140	21.33	0.16	7.35	1929	156	1.42	12.453
2019_10_14	18:52:09	141	26.37	0.12	7.35	1923	157	1.32	12.49
2019_10_14	18:53:09	141	19.27	0.12	7.35	1910	157	1.37	12.666
2019_10_14	18:54:09	140	26.28	0.13	7.35	1931	156	1.52	12.866
2019_10_14	18:55:09	141	26.14	0.13	7.35	1919	157	1.41	12.523
2019_10_14	18:56:09	141	25.51	0.12	7.35	1936	157	1.42	12.598
2019_10_14	18:57:09	141	26.01	0.12	7.35	1932	157	1.42	12.641
2019_10_14	18:58:09	141	25.94	0.13	7.34	1931	156	1.32	12.507
2019_10_14	18:59:09	141	25.87	0.12	7.34	1932	157	1.37	12.546
2019_10_14	19:00:09	141	25.7	0.1	7.34	1938	157	1.41	12.722
2019_10_14	19:01:09	140	25.34	0.1	7.35	1923	158	1.37	12.681
2019_10_14	19:02:09	141	23.56	0.11	7.34	1908	158	1.63	12.46
2019_10_14	19:03:09	142	25.54	0.1	7.34	1903	158	1.63	12.487

2019_10_14	19:04:09	141	25.44	0.07	7.34	1890	158	1.56	12.593
2019_10_14	19:05:09	142	25.44	0.09	7.35	1883	158	1.52	12.651
2019_10_14	19:06:09	140	25.9	0.12	7.35	1876	158	1.42	12.604
2019_10_14	19:07:09	141	25.31	0.12	7.35	1866	160	1.47	12.704
2019_10_14	19:08:09	141	25.27	0.13	7.35	1865	158	1.37	12.723
2019_10_14	19:09:09	141	25.23	0.14	7.36	1860	158	1.42	12.686
2019_10_14	19:10:09	141	25.23	0.13	7.36	1860	158	1.42	12.766
2019_10_14	19:11:09	141	22.25	0.1	7.36	1886	158	1.45	12.896
2019_10_14	19:12:09	141	25.31	0.12	7.36	1906	158	1.37	12.688
2019_10_14	19:13:09	141	21.01	0.14	7.36	1926	158	1.42	12.417
2019_10_14	19:14:09	141	19.98	0.09	7.35	1932	158	1.32	12.482
2019_10_14	19:15:09	141	25.16	0.09	7.35	1921	156	1.32	12.526
2019_10_14	19:16:09	141	25.16	0.11	7.35	1931	156	1.32	12.544
2019_10_14	19:17:09	141	20.4	0.14	7.35	1925	155	1.26	12.574
2019_10_14	19:18:09	141	24.63	0.15	7.35	1942	156	1.32	12.669
2019_10_14	19:19:09	141	20.1	0.15	7.35	1959	156	1.26	12.575
2019_10_14	19:20:09	141	25.33	0.17	7.35	1947	156	1.21	12.178
2019_10_14	19:21:09	140	24.2	0.11	7.35	1942	155	1.21	12.353
2019_10_14	19:22:09	141	25.27	0.1	7.34	1929	156	1.11	12.505
2019_10_14	19:23:09	141	24.18	0.14	7.35	1914	156	1.11	12.453
2019_10_14	19:24:09	141	25.15	0.16	7.35	1909	156	1.16	12.925
2019_10_14	19:25:09	140	25.11	0.16	7.35	1903	156	1.06	12.66
2019_10_14	19:26:09	141	24.21	0.14	7.36	1893	156	1.16	12.632
2019_10_14	19:27:09	141	25.27	0.11	7.36	1898	156	1.11	12.637
2019_10_14	19:28:09	141	25.2	0.08	7.36	1913	156	1.11	12.514
2019_10_14	19:29:09	141	25.16	0.09	7.37	1914	156	1.11	13.025
2019_10_14	19:30:09	141	24.64	0.09	7.36	1914	155	1	12.51
2019_10_14	19:31:09	141	25.2	0.07	7.36	1916	156	0.99	12.578
2019_10_14	19:32:09	141	19.64	0.09	7.36	1917	156	1	12.524
2019_10_14	19:33:09	141	25.15	0.09	7.36	1907	158	0.95	12.504
2019_10_14	19:34:09	141	24.41	0.15	7.37	1896	159	0.95	13.027
2019_10_14	19:35:09	141	25.74	0.14	7.37	1898	156	0.95	12.644
2019_10_14	19:36:09	140	23.66	0.14	7.37	1890	158	1	12.456
2019_10_14	19:37:09	141	24.49	0.15	7.37	1886	158	1	12.515
2019_10_14	19:38:09	141	25.14	0.13	7.37	1878	158	1	12.568
2019_10_14	19:39:09	141	25.27	0.15	7.37	1875	159	1.05	12.796
2019_10_14	19:40:09	141	25.6	0.15	7.37	1872	159	1	12.592
2019_10_14	19:41:09	140	24.99	0.14	7.38	1866	158	1.11	12.705
2019_10_14	19:42:09	141	25.14	0.14	7.38	1867	159	1.05	12.697
2019_10_14	19:43:09	141	25.2	0.09	7.39	1861	159	1.05	12.688
2019_10_14	19:44:09	141	25.31	0.09	7.39	1863	158	1	12.59
2019_10_14	19:45:09	141	20.9	0.08	7.39	1856	161	1.05	12.928
2019_10_14	19:46:09	140	24.53	0.1	7.39	1869	159	1.11	12.764
2019_10_14	19:47:09	141	25.06	0.12	7.4	1874	159	1.11	12.836
2019_10_14	19:48:09	141	25.17	0.13	7.4	1885	158	1.11	12.517
2019_10_14	19:49:09	141	24.13	0.11	7.4	1882	160	1.05	12.6
2019_10_14	19:50:09	141	25.27	0.13	7.4	1865	159	1.11	12.582
2019_10_14	19:51:09	141	24.22	0.1	7.4	1861	158	1.41	13.056
2019_10_14	19:52:09	141	24.77	0.12	7.4	1859	159	1.16	12.956
2019_10_14	19:53:09	141	25.38	0.14	7.4	1858	158	1.11	13.107
2019_10_14	19:54:09	141	21.27	0.12	7.4	1853	158	1.05	12.772
2019_10_14	19:55:09	141	25.54	0.12	7.4	1850	156	1	12.691
2019_10_14	19:56:09	141	21.74	0.14	7.4	1849	156	1	12.883
2019_10_14	19:57:09	141	25.67	0.15	7.4	1875	156	1.05	12.659
2019_10_14	19:58:09	142	19.76	0.15	7.4	1909	158	1.11	12.773
2019_10_14	19:59:09	140	25.81	0.15	7.4	1936	158	1.05	12.73
2019_10_14	20:00:09	141	25.51	0.14	7.39	1955	158	0.9	12.458
2019_10_14	20:01:09	142	25.81	0.12	7.38	1955	156	0.84	12.329
2019_10_14	20:02:09	140	24.4	0.12	7.38	1968	158	0.89	12.649
2019_10_14	20:03:09	141	26.01	0.11	7.37	1975	159	0.8	12.369
2019_10_14	20:04:09	141	22.81	0.14	7.37	1978	159	0.89	12.502
2019_10_14	20:05:09	141	26.08	0.15	7.38	1990	158	0.79	12.339
2019_10_14	20:06:09	140	26.87	0.16	7.37	1982	158	0.85	12.601
2019_10_14	20:07:09	141	24.77	0.12	7.37	1989	158	0.79	12.386
2019_10_14	20:08:09	140	19.87	0.12	7.38	1985	160	0.85	12.731
2019_10_14	20:09:09	141	26.47	0.11	7.38	1982	159	0.85	12.471
2019_10_14	20:10:09	141	19.73	0.08	7.38	1980	160	0.95	12.609
2019_10_14	20:11:09	141	21.95	0.1	7.38	1975	160	0.9	12.392
2019_10_14	20:12:09	141	26.18	0.08	7.38	1980	160	0.89	12.504
2019_10_14	20:13:09	141	24.81	0.11	7.38	1978	158	0.85	12.447
2019_10_14	20:14:09	140	26.29	0.14	7.38	1982	159	0.89	12.605
2019_10_14	20:15:09	141	24.56	0.15	7.38	1973	159	1.52	12.417
2019_10_14	20:16:09	141	26.44	0.18	7.38	1973	159	1.21	12.514
2019_10_14	20:17:09	141	26.48	0.2	7.38	1972	161	1.11	12.478
2019_10_14	20:18:09	141	20.6	0.19	7.38	1976	158	1	12.512
2019_10_14	20:19:09	140	26.95	0.2	7.38	1974	161	0.95	12.592
2019_10_14	20:20:09	141	21.85	0.19	7.38	1976	162	0.9	12.487
2019_10_14	20:21:09	141	26.51	0.18	7.39	1976	158	0.95	12.367

2019_10_14	20:22:09	140	26.71	0.19	7.38	1974	158	0.9	12.537
2019_10_14	20:23:09	140	26.88	0.2	7.38	1976	160	0.89	12.666
2019_10_14	20:24:09	140	21.33	0.18	7.38	1970	158	0.9	12.688
2019_10_14	20:25:09	141	26.8	0.15	7.38	1969	158	1	12.575
2019_10_14	20:26:09	141	26.75	0.15	7.38	1978	160	1.05	12.675
2019_10_14	20:27:09	141	26.8	0.12	7.38	1988	160	0.95	12.608
2019_10_14	20:28:09	140	26.5	0.09	7.38	1984	160	1.16	12.817
2019_10_14	20:29:09	140	17.49	0.14	7.38	1976	157	0.95	12.558
2019_10_14	20:30:09	141	22.36	0.11	7.38	1989	158	0.95	12.642
2019_10_14	20:31:09	140	21.67	0.1	7.39	1991	160	0.95	12.714
2019_10_14	20:32:09	141	18.87	0.11	7.39	1991	158	1	12.571
2019_10_14	20:33:09	140	19.43	0.11	7.39	1985	160	0.9	12.541
2019_10_14	20:34:09	141	25.34	0.11	7.39	1980	160	1.11	12.464
2019_10_14	20:35:09	141	25.34	0.14	7.39	1971	158	1.11	12.667
2019_10_14	20:36:09	140	27.55	0.13	7.39	1978	157	1.05	12.503
2019_10_14	20:37:09	141	21.82	0.15	7.39	1975	158	0.95	12.58
2019_10_14	20:38:09	140	19.74	0.15	7.39	1974	158	1.05	12.648
2019_10_14	20:39:09	141	27.38	0.16	7.38	1973	158	0.95	12.68
2019_10_14	20:40:09	141	19.55	0.17	7.38	1974	160	1.05	12.707
2019_10_14	20:41:09	141	26.18	0.16	7.38	1977	157	0.95	12.554
2019_10_14	20:42:09	141	27.67	0.12	7.38	1981	156	1	12.623
2019_10_14	20:43:09	141	24.17	0.13	7.38	1983	158	0.91	12.518
2019_10_14	20:44:09	141	19.51	0.12	7.37	1977	157	0.9	12.572
2019_10_14	20:45:09	141	27.71	0.11	7.37	1980	156	0.95	12.524
2019_10_14	20:46:09	140	20.14	0.1	7.37	1974	157	1	12.725
2019_10_14	20:47:09	141	26.17	0.1	7.37	1973	157	0.95	12.579
2019_10_14	20:48:09	141	27.89	0.09	7.37	1977	158	0.9	12.668
2019_10_14	20:49:09	140	27.72	0.14	7.37	1981	157	0.95	12.572
2019_10_14	20:50:09	141	27.67	0.19	7.37	1972	158	0.95	12.741
2019_10_14	20:51:09	141	24.34	0.18	7.37	1985	158	0.9	12.556
2019_10_14	20:52:09	141	28.02	0.2	7.37	1981	158	0.95	12.558
2019_10_14	20:53:09	141	28.05	0.23	7.37	1973	157	1	12.446
2019_10_14	20:54:09	140	25.51	0.25	7.37	1998	156	0.95	12.5
2019_10_14	20:55:09	141	23.99	0.24	7.38	2037	156	1	13.455
2019_10_14	20:56:09	142	27.58	0.25	7.39	2027	156	0.95	13.689
2019_10_14	20:57:09	140	24.5	0.22	7.38	2007	156	0.95	12.903
2019_10_14	20:58:09	140	23.59	0.23	7.38	1991	156	0.95	12.591
2019_10_14	20:59:09	141	27.15	0.23	7.37	1978	156	0.95	12.745
2019_10_14	21:00:09	140	20.27	0.22	7.37	1972	154	0.95	12.716
2019_10_14	21:01:09	140	21.65	0.21	7.37	1975	154	0.95	12.993
2019_10_14	21:02:09	140	19.75	0.21	7.37	1978	157	0.9	12.814
2019_10_14	21:03:09	141	28.06	0.25	7.37	1986	156	1.06	12.656
2019_10_14	21:04:09	141	28.09	0.28	7.37	1987	156	1	12.752
2019_10_14	21:05:09	141	23.8	0.29	7.37	1983	156	1	12.629
2019_10_14	21:06:09	140	24.65	0.24	7.37	1985	156	1	12.608
2019_10_14	21:07:09	140	28.42	0.2	7.36	1983	156	1	12.681
2019_10_14	21:08:09	140	28.17	0.19	7.37	1978	156	0.95	12.762

DATE (YYYY_MM_DD)	TIME (HH:MM:SS)	FLOW (GPM)	LEVEL (IN. WC)	DIFF_PRESS (IN. WC)	PH	SCC (DEG F)	STACK TEMP (DEG F)	CO LEVEL (0-200 PPM)	OXYGEN LEVEL (0-25%)
2019_10_16	12:00:10	136	46.09	0.31	7.44	1939	158	2.9	12.476
2019_10_16	12:01:10	137	45.92	0.32	7.43	1962	157	2.47	11.696
2019_10_16	12:02:10	137	40.89	0.28	7.41	1973	158	2.36	11.341
2019_10_16	12:03:10	137	41.4	0.3	7.41	1968	157	2.26	11.642
2019_10_16	12:04:10	137	40.04	0.29	7.41	1969	156	2.05	11.449
2019_10_16	12:05:10	136	41.29	0.3	7.4	1957	156	2.21	11.431
2019_10_16	12:06:10	136	44.24	0.29	7.4	1956	156	2.1	11.414
2019_10_16	12:07:10	138	32.84	0.3	7.41	1953	156	2.26	11.875
2019_10_16	12:08:10	136	42.63	0.31	7.41	1950	156	2.05	11.518
2019_10_16	12:09:10	137	43.39	0.29	7.41	1954	157	2.21	11.491
2019_10_16	12:10:10	137	45.17	0.28	7.41	1957	157	2.1	11.528
2019_10_16	12:11:10	136	44.35	0.26	7.41	1961	157	2.21	11.501
2019_10_16	12:12:10	136	44.32	0.28	7.42	1950	157	2.16	11.577
2019_10_16	12:13:10	137	40.06	0.27	7.42	1952	159	2.36	11.565
2019_10_16	12:14:10	137	33.2	0.28	7.42	1947	156	2.05	11.542
2019_10_16	12:15:10	137	31.08	0.27	7.42	1943	159	2.16	11.447
2019_10_16	12:16:10	136	39.6	0.25	7.42	1931	157	2.31	11.72
2019_10_16	12:17:10	135	41.44	0.24	7.42	1929	159	2.05	11.504
2019_10_16	12:18:10	137	43.29	0.26	7.42	1931	160	2.16	11.599
2019_10_16	12:19:10	137	38.75	0.25	7.43	1926	157	2.36	11.562
2019_10_16	12:20:10	136	46.63	0.22	7.43	1927	160	2.16	11.59
2019_10_16	12:21:10	137	45.68	0.25	7.43	1926	160	2.42	11.542
2019_10_16	12:22:10	136	31.76	0.25	7.43	1920	158	2.21	11.526
2019_10_16	12:23:10	137	41.77	0.23	7.43	1915	160	2.31	11.54
2019_10_16	12:24:10	137	42.15	0.25	7.44	1911	162	2.26	11.755
2019_10_16	12:25:10	136	43.56	0.27	7.44	1909	160	2.16	11.759
2019_10_16	12:26:10	137	45.64	0.27	7.44	1896	158	2.26	11.518
2019_10_16	12:27:10	136	36.02	0.33	7.44	1894	160	2.52	11.605
2019_10_16	12:28:10	137	43.54	0.25	7.45	1889	158	2.21	11.623
2019_10_16	12:29:10	136	44.44	0.24	7.45	1888	159	2.47	11.679
2019_10_16	12:30:10	137	38.5	0.27	7.45	1894	160	2.26	11.714
2019_10_16	12:31:10	137	36.22	0.24	7.46	1886	158	2.36	11.81
2019_10_16	12:32:10	136	36.29	0.26	7.46	1888	156	2.47	11.778
2019_10_16	12:33:10	136	38.81	0.26	7.46	1883	158	2.36	11.787
2019_10_16	12:34:10	136	32.15	0.25	7.47	1888	156	2.31	11.963
2019_10_16	12:35:10	136	39.91	0.25	7.47	1883	156	2.31	11.909
2019_10_16	12:36:10	137	43.72	0.28	7.47	1884	159	2.41	12.06
2019_10_16	12:37:10	136	41.69	0.27	7.47	1878	156	2.31	11.979
2019_10_16	12:38:10	136	33.99	0.29	7.47	1877	158	2.47	12.065
2019_10_16	12:39:10	136	42.87	0.24	7.47	1872	159	2.26	11.816
2019_10_16	12:40:10	136	36.45	0.27	7.47	1858	158	2.36	11.832
2019_10_16	12:41:10	137	41.87	0.25	7.47	1855	155	2.57	11.918
2019_10_16	12:42:10	136	37.02	0.22	7.47	1854	158	2.69	12.173
2019_10_16	12:43:10	137	38.23	0.22	7.48	1853	158	2.36	12.114
2019_10_16	12:44:10	137	31.11	0.26	7.48	1895	159	2.62	12.308
2019_10_16	12:45:10	136	46.46	0.28	7.48	1927	156	2.36	12.185
2019_10_16	12:46:10	137	29.79	0.29	7.47	1940	158	2.57	11.985
2019_10_16	12:47:10	136	39.31	0.25	7.47	1948	158	2.26	11.473
2019_10_16	12:48:10	136	45.29	0.27	7.46	1951	159	2.26	11.322
2019_10_16	12:49:10	137	43.25	0.28	7.46	1945	159	2.38	11.528
2019_10_16	12:50:10	137	42.51	0.26	7.46	1945	159	2.1	11.404
2019_10_16	12:51:10	137	42.46	0.26	7.46	1942	159	2.16	11.465
2019_10_16	12:52:10	135	47.22	0.27	7.46	1934	160	2.39	11.44
2019_10_16	12:53:10	136	38.66	0.27	7.46	1918	158	2.11	11.43
2019_10_16	12:54:10	135	40.21	0.28	7.46	1916	160	2.31	11.501
2019_10_16	12:55:10	135	39	0.29	7.46	1899	158	2.36	11.74
2019_10_16	12:56:10	137	36.05	0.32	7.47	1878	158	2.31	11.707
2019_10_16	12:57:10	136	32.45	0.29	7.48	1879	158	2.52	12.148
2019_10_16	12:58:10	137	38.3	0.31	7.49	1859	155	2.31	12.209
2019_10_16	12:59:10	136	39.91	0.32	7.49	1862	156	2.57	12.369
2019_10_16	13:00:10	136	39.64	0.35	7.5	1876	156	2.31	12.188
2019_10_16	13:01:10	136	34.84	0.32	7.5	1873	156	2.61	12.461
2019_10_16	13:02:10	136	35.4	0.31	7.5	1874	156	2.36	12.278
2019_10_16	13:03:10	137	37.75	0.31	7.5	1861	156	2.41	12.304
2019_10_16	13:04:10	136	40.81	0.31	7.5	1876	155	2.65	12.407
2019_10_16	13:05:10	136	42.02	0.34	7.5	1884	159	2.31	12.412
2019_10_16	13:06:10	137	39.65	0.35	7.49	1892	159	2.57	12.348
2019_10_16	13:07:10	136	41.35	0.34	7.49	1901	156	2.26	11.76
2019_10_16	13:08:10	136	31.74	0.39	7.48	1896	156	2.49	12.037
2019_10_16	13:09:10	137	39.98	0.35	7.48	1896	159	2.38	12.36
2019_10_16	13:10:10	137	37.95	0.34	7.47	1884	159	2.31	11.963
2019_10_16	13:11:10	137	40.1	0.31	7.47	1869	156	2.36	11.899
2019_10_16	13:12:10	135	43.26	0.32	7.47	1897	156	2.58	11.875
2019_10_16	13:13:10	136	42.78	0.28	7.46	1952	156	2.27	11.793
2019_10_16	13:14:10	136	42.06	0.29	7.46	1984	158	2.57	11.838
2019_10_16	13:15:10	137	39.6	0.28	7.45	1994	158	2.16	11.336

2019_10_16	13:16:10	136	45.75	0.31	7.44	1996	156	2.36	11.608
2019_10_16	13:17:10	136	41.71	0.3	7.44	1994	159	2.1	11.135
2019_10_16	13:18:10	135	41.01	0.33	7.44	1981	158	2.1	11.275
2019_10_16	13:19:10	136	33.51	0.31	7.44	1985	159	2.21	11.134
2019_10_16	13:20:10	136	33.31	0.3	7.44	1990	160	2.1	11.141
2019_10_16	13:21:10	137	41.63	0.28	7.44	1997	160	2.41	11.393
2019_10_16	13:22:10	136	43.24	0.28	7.44	1993	159	2.08	11.095
2019_10_16	13:23:10	137	44.53	0.32	7.44	1992	159	2.28	11.445
2019_10_16	13:24:10	136	32.3	0.31	7.44	1981	159	2	11.275
2019_10_16	13:25:10	137	35.94	0.3	7.44	1986	160	2.28	11.466
2019_10_16	13:26:10	136	41.28	0.28	7.45	1975	159	1.95	11.323
2019_10_16	13:27:10	136	39.45	0.28	7.44	1958	159	2.26	11.353
2019_10_16	13:28:10	136	36.9	0.26	7.44	1959	159	2	11.211
2019_10_16	13:29:10	136	33.24	0.27	7.44	1952	158	2.31	11.579
2019_10_16	13:30:10	136	35.82	0.27	7.45	1950	160	2.05	11.42
2019_10_16	13:31:10	137	35.8	0.29	7.45	1943	159	2.41	11.53
2019_10_16	13:32:10	136	37.69	0.23	7.45	1943	159	2.15	11.475
2019_10_16	13:33:10	136	8.53	0.3	7.46	1932	159	2.36	11.63
2019_10_16	13:34:10	136	8.56	0.28	7.46	1941	160	2.1	11.593
2019_10_16	13:35:10	136	10.3	0.25	7.47	1943	160	2.21	11.568
2019_10_16	13:36:10	136	10.66	0.27	7.47	1939	160	2.46	11.381
2019_10_16	13:37:10	137	8.72	0.27	7.47	1940	160	2.16	11.556
2019_10_16	13:38:10	136	10.38	0.29	7.47	1930	159	2.41	11.538
2019_10_16	13:39:10	136	10.69	0.29	7.48	1927	160	2.16	11.51
2019_10_16	13:40:10	136	10.69	0.3	7.48	1920	160	2.26	11.431
2019_10_16	13:41:10	136	7.51	0.32	7.48	1913	159	2.52	11.573
2019_10_16	13:42:10	136	7.51	0.31	7.48	1915	160	2.52	11.576
2019_10_16	13:43:10	136	7.51	0.32	7.49	1903	159	2.26	11.555
2019_10_16	13:44:10	135	7.51	0.26	7.49	1911	160	2.31	11.79
2019_10_16	13:45:10	135	7.6	0.3	7.49	1903	158	2.42	11.587
2019_10_16	13:46:10	136	7.56	0.28	7.5	1893	159	2.26	11.725
2019_10_16	13:47:10	137	41.17	0.32	7.5	1888	158	2.36	11.646
2019_10_16	13:48:10	136	43.2	0.29	7.5	1883	159	2.31	11.785
2019_10_16	13:49:10	136	35.94	0.27	7.5	1889	159	2.52	11.778
2019_10_16	13:50:10	136	45.6	0.29	7.5	1933	159	2.36	11.891
2019_10_16	13:51:10	136	40.03	0.3	7.5	1980	158	2.36	11.795
2019_10_16	13:52:10	136	47.16	0.27	7.49	1999	160	2.36	11.425
2019_10_16	13:53:10	135	42.03	0.28	7.48	2003	159	2.26	11.639
2019_10_16	13:54:10	136	33.82	0.3	7.48	1991	159	2.05	11.383
2019_10_16	13:55:10	136	35.47	0.25	7.48	1998	156	2.05	11.255
2019_10_16	13:56:10	135	38.09	0.23	7.48	1994	158	2.1	11.387
2019_10_16	13:57:10	135	42.3	0.25	7.48	1990	159	2.01	11.548
2019_10_16	13:58:10	136	45.01	0.27	7.48	1974	159	2.26	11.599
2019_10_16	13:59:10	135	26.5	0.27	7.48	1979	158	1.9	11.321
2019_10_16	14:00:10	135	29.59	0.27	7.49	1977	159	2.11	11.691
2019_10_16	14:01:10	135	25.71	0.29	7.49	1996	157	2.01	11.72
2019_10_16	14:02:10	135	29.62	0.27	7.48	2013	157	2.01	11.621
2019_10_16	14:03:10	136	29.66	0.29	7.47	2017	158	2.1	11.417
2019_10_16	14:04:10	135	29.75	0.26	7.46	2015	158	1.9	10.932
2019_10_16	14:05:10	136	30.05	0.26	7.46	2011	159	2	10.845
2019_10_16	14:06:10	135	30.13	0.26	7.46	2013	159	2.16	11.089
2019_10_16	14:07:10	136	30.87	0.23	7.46	2014	159	1.78	10.824
2019_10_16	14:08:10	135	30.41	0.27	7.47	2018	159	1.95	11.199
2019_10_16	14:09:10	135	30.41	0.25	7.47	2003	157	2.1	11.138
2019_10_16	14:10:10	136	21.36	0.27	7.47	1998	157	2.01	11.18
2019_10_16	14:11:10	135	21.71	0.26	7.47	1988	157	1.84	11.168
2019_10_16	14:12:10	135	21.85	0.25	7.47	1997	158	2	11.281
2019_10_16	14:13:10	136	21.7	0.25	7.48	1997	158	1.85	11.215
2019_10_16	14:14:10	135	21.67	0.25	7.48	1989	157	2.11	11.226
2019_10_16	14:15:10	135	21.74	0.24	7.48	1982	158	1.85	11.217
2019_10_16	14:16:10	135	21.78	0.24	7.48	1978	158	1.9	11.403
2019_10_16	14:17:10	135	21.78	0.28	7.48	1974	158	2.16	11.486
2019_10_16	14:18:10	135	21.77	0.24	7.48	1982	158	1.78	11.419
2019_10_16	14:19:10	136	23.31	0.27	7.48	1969	155	1.95	11.384
2019_10_16	14:20:10	135	21.78	0.29	7.47	1957	155	2.1	11.33
2019_10_16	14:21:10	135	21.78	0.31	7.46	1962	156	1.95	11.092
2019_10_16	14:22:10	136	21.85	0.33	7.45	1954	156	2.21	11.719
2019_10_16	14:23:10	135	21.74	0.33	7.43	1946	155	1.95	11.292
2019_10_16	14:24:10	136	21.81	0.32	7.42	1948	157	2.05	11.04
2019_10_16	14:25:10	135	28.28	0.33	7.4	1937	157	2.26	11.321
2019_10_16	14:26:10	136	21.77	0.32	7.39	1946	158	2.05	11.168
2019_10_16	14:27:10	136	26.49	0.28	7.38	1934	157	2.21	11.105
2019_10_16	14:28:10	136	37.03	0.29	7.37	1941	158	2.36	11.151
2019_10_16	14:29:10	137	40.97	0.29	7.35	1934	157	2.1	10.853
2019_10_16	14:30:10	135	38.14	0.31	7.35	1939	158	2.21	11.024
2019_10_16	14:31:10	136	40.6	0.3	7.33	1936	158	2.42	11.343
2019_10_16	14:32:10	136	37.04	0.27	7.32	1934	160	2.05	11.201
2019_10_16	14:33:10	136	42.09	0.3	7.31	1933	160	2.05	11.042

2019_10_16	14:34:10	136	36.44	0.34	7.31	1926	162	2.16	10.903
2019_10_16	14:35:10	136	32.44	0.33	7.3	1927	162	2.36	11.115
2019_10_16	14:36:10	135	38.65	0.33	7.29	1929	161	2.05	10.845
2019_10_16	14:37:10	136	41.51	0.3	7.28	1926	162	2.26	11.178
2019_10_16	14:38:10	135	25.34	0.33	7.28	1938	162	2.31	10.735
2019_10_16	14:39:10	136	25.39	0.32	7.29	1954	162	2.21	10.89
2019_10_16	14:40:10	136	21.43	0.3	7.29	1946	161	2.41	11.51
2019_10_16	14:41:10	136	24.2	0.27	7.29	1931	161	2.16	11.228
2019_10_16	14:42:10	136	25.5	0.28	7.28	1918	161	2.58	11.031
2019_10_16	14:43:10	137	24.4	0.27	7.28	1918	162	2.1	10.739
2019_10_16	14:44:10	135	24.15	0.32	7.29	1912	162	2.42	11.353
2019_10_16	14:45:10	136	24.13	0.3	7.29	1903	160	2.16	11.409
2019_10_16	14:46:10	136	25.46	0.31	7.29	1897	160	2.21	11.041
2019_10_16	14:47:10	135	24.42	0.35	7.3	1893	159	2.31	11.545
2019_10_16	14:48:10	136	26.13	0.29	7.3	1892	160	2.11	11.227
2019_10_16	14:49:10	136	25.62	0.33	7.31	1890	159	2.21	11.63
2019_10_16	14:50:10	136	26.4	0.33	7.31	1887	160	1.95	11.783
2019_10_16	14:51:10	136	43.99	0.3	7.31	1897	160	1.84	11.756
2019_10_16	14:52:10	136	31.87	0.3	7.32	1902	158	1.9	11.62
2019_10_16	14:53:10	135	39.55	0.27	7.32	1891	158	1.95	11.601
2019_10_16	14:54:10	136	33.67	0.29	7.33	1892	158	1.9	12.036
2019_10_16	14:55:10	135	40.65	0.31	7.33	1883	160	1.95	11.886
2019_10_16	14:56:10	136	39.59	0.3	7.33	1885	160	1.95	11.395
2019_10_16	14:57:10	136	40.96	0.32	7.33	1877	159	2.05	11.466
2019_10_16	14:58:10	136	32.48	0.28	7.33	1875	160	1.95	11.286
2019_10_16	14:59:10	136	39.31	0.28	7.34	1869	160	2.05	11.962
2019_10_16	15:00:10	136	36.09	0.3	7.34	1862	158	1.95	11.464
2019_10_16	15:01:10	135	37.16	0.26	7.34	1871	160	2.05	11.511
2019_10_16	15:02:10	136	37.11	0.28	7.34	1863	159	2.05	11.874
2019_10_16	15:03:10	136	37.18	0.27	7.34	1859	158	2.01	11.467
2019_10_16	15:04:10	136	42.49	0.26	7.34	1849	158	2.05	11.565
2019_10_16	15:05:10	136	43.38	0.26	7.34	1853	159	2.16	11.603
2019_10_16	15:06:10	137	36.26	0.26	7.34	1851	159	2.21	11.64
2019_10_16	15:07:10	137	44.06	0.24	7.34	1919	159	2.16	12.223
2019_10_16	15:08:10	131	43.05	0.25	7.34	1963	159	2.11	12.173
2019_10_16	15:09:10	135	41.36	0.24	7.33	2004	161	2.21	11.461
2019_10_16	15:10:10	134	37.04	0.22	7.32	2018	159	1.84	11.264
2019_10_16	15:11:10	135	38.61	0.23	7.31	2028	159	1.78	10.656
2019_10_16	15:12:10	135	37.81	0.27	7.31	2023	158	1.78	10.866
2019_10_16	15:13:10	135	39.36	0.24	7.3	2018	162	1.9	10.773
2019_10_16	15:14:10	136	38.09	0.25	7.3	2010	159	1.78	10.867
2019_10_16	15:15:10	134	43.15	0.24	7.3	2008	159	1.78	11.448
2019_10_16	15:16:10	135	27.41	0.27	7.31	1994	160	1.78	11.605
2019_10_16	15:17:10	134	21.27	0.22	7.31	1993	159	1.85	11.328
2019_10_16	15:18:10	136	26.96	0.23	7.32	1986	159	1.85	11.479
2019_10_16	15:19:10	134	21.74	0.31	7.32	1981	159	1.78	11.646
2019_10_16	15:20:10	136	21.67	0.32	7.32	2001	160	1.78	11.281
2019_10_16	15:21:10	135	21.67	0.32	7.32	1999	160	1.78	11.286
2019_10_16	15:22:10	135	21.71	0.32	7.32	1987	162	1.84	11.119
2019_10_16	15:23:10	134	21.7	0.31	7.32	1988	159	1.73	11.204
2019_10_16	15:24:10	135	21.63	0.32	7.32	1985	162	1.85	11.622
2019_10_16	15:25:10	134	21.69	0.3	7.32	1990	160	1.78	11.101
2019_10_16	15:26:10	135	21.67	0.29	7.32	1986	162	1.84	10.994
2019_10_16	15:27:10	135	21.63	0.32	7.32	2008	162	1.78	11.38
2019_10_16	15:28:10	135	21.63	0.33	7.32	2027	160	1.9	11.066
2019_10_16	15:29:10	135	21.68	0.3	7.32	2010	159	1.85	11.639
2019_10_16	15:30:10	135	21.66	0.28	7.32	1998	162	1.85	11.056
2019_10_16	15:31:10	134	21.72	0.3	7.32	1992	162	1.68	11.023
2019_10_16	15:32:10	134	21.67	0.33	7.32	1985	163	1.84	10.78
2019_10_16	15:33:10	135	21.7	0.34	7.31	1977	160	1.9	10.839
2019_10_16	15:34:10	135	21.63	0.34	7.31	1975	162	1.78	10.868
2019_10_16	15:35:10	135	21.63	0.32	7.31	1978	159	1.9	11.485
2019_10_16	15:36:10	134	18.73	0.33	7.31	1969	159	1.79	10.971
2019_10_16	15:37:10	134	21.66	0.31	7.31	1969	159	1.73	11.673
2019_10_16	15:38:10	135	21.7	0.31	7.32	1957	159	1.9	11.329
2019_10_16	15:39:10	134	21.74	0.3	7.31	1955	159	1.78	11.046
2019_10_16	15:40:10	135	21.59	0.29	7.32	1950	158	1.9	11.279
2019_10_16	15:41:10	135	21.64	0.26	7.32	1950	160	1.9	11.134
2019_10_16	15:42:10	134	21.63	0.28	7.32	1948	159	1.85	11.161
2019_10_16	15:43:10	134	21.4	0.29	7.32	1945	159	2.05	11.096
2019_10_16	15:44:10	135	19.29	0.3	7.32	1937	159	1.95	11.21
2019_10_16	15:45:10	136	21.6	0.29	7.32	1929	158	1.95	11.076
2019_10_16	15:46:10	134	21.67	0.26	7.32	1918	159	2.05	11.553
2019_10_16	15:47:10	134	21.64	0.31	7.32	1923	159	1.95	11.27
2019_10_16	15:48:10	134	21.64	0.33	7.33	1924	159	2.05	11.633
2019_10_16	15:49:10	135	22.05	0.32	7.33	1932	160	2.16	11.116
2019_10_16	15:50:10	134	21.51	0.31	7.33	1929	158	2.05	11.287
2019_10_16	15:51:10	135	21.63	0.28	7.33	1927	159	2	10.966

2019_10_16	15:52:10	134	21.53	0.28	7.33	1927	162	2.1	11.163
2019_10_16	15:53:10	135	20.36	0.3	7.33	1926	162	2.01	11.185
2019_10_16	15:54:10	135	20.86	0.29	7.34	1926	162	2.11	11.445
2019_10_16	15:55:10	135	21.66	0.28	7.34	1924	159	2.05	11.213
2019_10_16	15:56:10	134	21.59	0.27	7.33	1917	159	2.05	11.178
2019_10_16	15:57:10	135	18.77	0.26	7.34	1916	159	2.05	11.452
2019_10_16	15:58:10	135	21.04	0.26	7.34	1920	160	1.95	11.354
2019_10_16	15:59:10	134	21.72	0.23	7.35	1923	160	2.1	11.252
2019_10_16	16:00:10	134	21.68	0.25	7.35	1919	162	2.16	11.308
2019_10_16	16:01:10	134	19.78	0.25	7.35	1923	160	2.11	11.726
2019_10_16	16:02:10	134	21.43	0.27	7.35	1931	158	2.21	11.812
2019_10_16	16:03:10	134	17.57	0.23	7.36	1924	160	2.1	11.804
2019_10_16	16:04:10	134	17.88	0.22	7.35	1922	159	2.1	11.548
2019_10_16	16:05:10	135	21.76	0.28	7.36	1920	160	2.16	11.614
2019_10_16	16:06:10	135	21.79	0.29	7.36	1920	160	2.05	11.368
2019_10_16	16:07:10	134	22.06	0.27	7.35	1918	162	2.16	11.754
2019_10_16	16:08:10	134	20.77	0.21	7.35	1907	160	2.11	11.483
2019_10_16	16:09:10	134	20.32	0.24	7.35	1916	163	2.11	11.982
2019_10_16	16:10:10	133	18.38	0.22	7.36	1911	163	2.11	11.825
2019_10_16	16:11:10	135	18.51	0.24	7.36	1901	163	2.21	11.571
2019_10_16	16:12:10	134	18.44	0.22	7.35	1909	160	2.21	11.213
2019_10_16	16:13:10	134	22.47	0.23	7.35	1902	160	2.31	11.491
2019_10_16	16:14:10	134	20.73	0.24	7.36	1906	160	2.21	11.363
2019_10_16	16:15:10	134	18.98	0.23	7.36	1902	162	2.36	11.594
2019_10_16	16:16:10	134	21.75	0.23	7.36	1897	159	2.21	11.196
2019_10_16	16:17:10	135	20.53	0.24	7.36	1891	160	2.21	11.466
2019_10_16	16:18:10	134	21.72	0.25	7.36	1886	160	2.16	11.314
2019_10_16	16:19:10	134	18.69	0.23	7.37	1883	160	2.31	11.534
2019_10_16	16:20:10	133	21.9	0.24	7.37	1883	160	2.26	11.423
2019_10_16	16:21:10	134	18.71	0.24	7.36	1882	160	2.31	11.414
2019_10_16	16:22:10	134	17.84	0.24	7.36	1882	160	2.21	11.433
2019_10_16	16:23:10	135	18	0.23	7.37	1872	160	2.31	11.699
2019_10_16	16:24:10	133	17.84	0.27	7.37	1867	160	2.21	11.441
2019_10_16	16:25:10	134	17.83	0.33	7.37	1882	160	2.26	11.623
2019_10_16	16:26:10	134	22.22	0.3	7.37	1882	160	2.31	12.119
2019_10_16	16:27:10	134	21.46	0.31	7.37	1874	160	2.26	11.723
2019_10_16	16:28:10	134	21.82	0.28	7.37	1873	158	2.31	11.826
2019_10_16	16:29:10	134	22.26	0.28	7.37	1867	160	2.26	12.124
2019_10_16	16:30:10	134	22.06	0.29	7.37	1887	159	2.42	11.452
2019_10_16	16:31:10	134	21.68	0.31	7.36	1941	159	2.42	11.442
2019_10_16	16:32:10	134	21.82	0.29	7.35	1985	160	2.52	11.332
2019_10_16	16:33:10	134	19.35	0.27	7.33	1996	157	2.16	11.13
2019_10_16	16:34:10	134	21.24	0.24	7.32	2000	158	2.16	10.947
2019_10_16	16:35:10	134	21.05	0.26	7.32	2013	158	2.05	11.433
2019_10_16	16:36:10	134	19.04	0.23	7.31	2015	159	2.05	11.419
2019_10_16	16:37:10	134	21.86	0.24	7.31	2022	159	2.01	11.134
2019_10_16	16:38:10	134	19.36	0.25	7.3	2015	158	2.01	11.496
2019_10_16	16:39:10	133	21.87	0.24	7.3	2016	158	2.11	10.926
2019_10_16	16:40:10	135	18.15	0.24	7.29	2013	159	2.01	10.942
2019_10_16	16:41:10	135	21.86	0.25	7.29	2008	158	2.05	11.183
2019_10_16	16:42:10	134	21.86	0.27	7.29	2002	159	2.11	11.013
2019_10_16	16:43:10	134	21.79	0.25	7.29	2012	159	2.01	11.086
2019_10_16	16:44:10	134	22.04	0.25	7.28	1998	158	2.01	11.438
2019_10_16	16:45:10	134	21.82	0.25	7.28	2004	158	2.05	11.129
2019_10_16	16:46:10	134	17.56	0.25	7.28	2004	158	1.9	11.24

APPENDIX A: Alaska Source Testing Emissions Test Report

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17067-1
Client Project/Site: M0010 Field Samples (MeOH)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/20/2020 7:06:03 AM

Courtney Adkins, Project Manager II
(865)291-3000
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LINKS

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The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified 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.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17067-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17067-1

Sample Receipt

The samples were received on October 19, 2019 at 9:30 AM in good condition and properly preserved. The temperatures of the 4 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C and 5.5º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS for the following sample: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The method blank for preparation batch 320-336962, 320-337396 and 320-338209 and analytical batch 320-340564 contained Perfluorooctanoic acid (PFOA) above the reporting limit (RL). There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332801, 320-333704 and 320-341442 and analytical batch 320-342900 recovered outside control limits for several analytes. Sample re-extraction and reanalysis was not possible due to insufficient sample; therefore, the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 and analytical batch 320-342895 recovered outside control limits for all the analytes. The LCS was reanalyzed with concurring results. The data have been reported with low bias results.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained Perfluorobutanoic acid (PFBA) and HFPO-DA (GenX) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Due to insufficient sample re-extraction and/or re-analysis of samples were not performed. The method blank was re-analyzed with concurring results; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-333418, 320-337394, 320-338203 and 320-341427 contained HFPO-DA (GenX) above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA), HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained Perfluorobutanoic acid (PFBA) above the reporting limit (RL). None of the samples associated with this method blank contained the target

Job ID: 140-17067-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 537 (modified): The method blank for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 contained HFPO-DA (GenX) and Perfluorooctanoic acid (PFOA) above the reporting limit (RL). The samples associated with this method blank contained the target compound. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported.

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-332701, 320-333287, 320-337477 and 320-341397 and analytical batch 320-342657 recovered outside control limits for several analytes. Re-extraction and/or re-analysis of samples were not performed due to insufficient sample; therefore the data have been reported with possible low bias.

Method 537 (modified): The “l” qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

E-1314,1315 R2 M0010 BH (140-17067-7), E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10) and E-1328,1329 R4 M0010 BH (140-17067-17)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-6:2 FTS is above the method recommended limit for the following sample: A-6621,6622 R6 M0010 BH (140-17067-27). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The method blank for preparation batch 320-336904, 320-338182 and 320-338718 and analytical batch 320-343208 contained Perfluorobutanoic acid (PFBA) above the method reporting limit (RL). Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample volume.

Method 537 (modified): The method blank for preparation batch 320-336904, 320-338182 and 320-338718 and analytical batch 320-347688 contained Perfluorobutanoic acid (PFBA) above the method reporting limit (RL). Sample re-extraction and/or re-analysis was not performed due to insufficient sample volume.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample for M2-4:2 FTS: E-1307,1308 R1 M0010 BH (140-17067-2) and E-1321,1322 R3 M0010 BH (140-17067-12). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the following sample M2-4:2 FTS and M2-6:2 FTS: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-5) and E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-15). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Surrogate recovery for 13C8 PFOA in the following continuing calibration verification was outside control limits: (CCV 320-349852/15). The surrogate recovery was biased high and all the associated samples were ND for this surrogate due to the possibility of not being spiked into the samples.

Method 537 (modified): Surrogate recoveries for the following samples was zero: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3), E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13) and A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23). It appears the samples were not spiked with surrogate compounds.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3), E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13) and A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23).

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

Comments

Job ID: 140-17067-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanoic acid (PFOA)	**2.65**	**H B**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorononanoic acid (PFNA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorodecanoic acid (PFDA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
4:2 FTS	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
6:2 FTS	**1.80**	**H**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
8:2 FTS	**4.89**	**H**	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
HFPO-DA (GenX)	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
F-53B Major	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1
F-53B Minor	ND	H	1.10	1.08	ng/Sample		11/08/19 14:30	11/21/19 21:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C5 PFPeA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFHxA	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFHpA	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFOA	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C5 PFNA	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFDA	*107*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFUnA	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFDoA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
18O2 PFHxS	*111*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C4 PFOS	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
13C8 FOSA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
d3-NMeFOSAA	*68*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*
d5-NEtFOSAA	*111*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:11*	*1*

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	144		25 - 150	11/08/19 14:30	11/21/19 21:11	1
M2-8:2 FTS	167	*	25 - 150	11/08/19 14:30	11/21/19 21:11	1
M2-4:2 FTS	129		25 - 150	11/08/19 14:30	11/21/19 21:11	1
13C3 HFPO-DA	83		25 - 150	11/08/19 14:30	11/21/19 21:11	1

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.48**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoropentanoic acid (PFPeA)	**2.07**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorohexanoic acid (PFHxA)	**52.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroheptanoic acid (PFHpA)	**77.9**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanoic acid (PFOA)	**28.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorodecanoic acid (PFDA)	**26.5**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorobutanesulfonic acid (PFBS)	**6.66**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanesulfonic acid (PFOS)	**1.79**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
HFPO-DA (GenX)	**2.65**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	52		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C5 PFPeA	60		25 - 150	11/08/19 14:30	12/20/19 20:27	1

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	84		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C4 PFHpA	76		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C4 PFOA	91		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C5 PFNA	84		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C2 PFDA	78		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C2 PFUnA	86		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C2 PFDoA	92		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C2 PFTeDA	77		25 - 150	11/08/19 14:30	12/20/19 20:27	1
18O2 PFHxS	85		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C4 PFOS	90		25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C8 FOSA	53		25 - 150	11/08/19 14:30	12/20/19 20:27	1
d3-NMeFOSAA	75		25 - 150	11/08/19 14:30	12/20/19 20:27	1
d5-NEtFOSAA	92		25 - 150	11/08/19 14:30	12/20/19 20:27	1
M2-6:2 FTS	150		25 - 150	11/08/19 14:30	12/20/19 20:27	1
M2-8:2 FTS	103		25 - 150	11/08/19 14:30	12/20/19 20:27	1
M2-4:2 FTS	156	*	25 - 150	11/08/19 14:30	12/20/19 20:27	1
13C3 HFPO-DA	77		25 - 150	11/08/19 14:30	12/20/19 20:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		50 - 150	11/08/19 14:30	12/20/19 20:27	1
13C8 PFOS	85		50 - 150	11/08/19 14:30	12/20/19 20:27	1

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanoic acid (PFOA)	**1.69**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
HFPO-DA (GenX)	**1.56**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*114*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C5 PFPeA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFHxA	*115*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFHpA	*124*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFOA	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C5 PFNA	*128*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFDA	*124*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFUnA	*126*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFDoA	*132*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C2 PFTeDA	*127*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
18O2 PFHxS	*135*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C4 PFOS	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C8 FOSA	*120*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
d3-NMeFOSAA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
d5-NEtFOSAA	*118*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-6:2 FTS	*176*	*	*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-8:2 FTS	*135*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*
13C3 HFPO-DA	*121*		*25 - 150*	*11/07/19 13:00*	*11/17/19 00:23*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.05*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 14:58*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 14:58*	*1*

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.03**	**J H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 08:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C5 PFPeA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFHpA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFDoA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
18O2 PFHxS	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
13C8 FOSA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
d5-NEtFOSAA	*109*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
M2-6:2 FTS	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*
M2-8:2 FTS	*94*		*25 - 150*	*11/08/19 14:30*	*12/06/19 08:43*	*1*

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	88		25 - 150	11/08/19 14:30	12/06/19 08:43	1
13C3 HFPO-DA	87		25 - 150	11/08/19 14:30	12/06/19 08:43	1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.83**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoropentanoic acid (PFPeA)	**1.90**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorohexanoic acid (PFHxA)	**50.2**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroheptanoic acid (PFHpA)	**71.7**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanoic acid (PFOA)	**25.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorodecanoic acid (PFDA)	**25.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorobutanesulfonic acid (PFBS)	**5.99**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanesulfonic acid (PFOS)	**1.85**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
HFPO-DA (GenX)	**4.59**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	65		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C5 PFPeA	72		25 - 150	11/08/19 14:30	12/20/19 20:37	1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	94		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C4 PFHpA	92		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C4 PFOA	104		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C5 PFNA	101		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C2 PFDA	84		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C2 PFUnA	92		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C2 PFDoA	96		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C2 PFTeDA	89		25 - 150	11/08/19 14:30	12/20/19 20:37	1
18O2 PFHxS	101		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C4 PFOS	94		25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C8 FOSA	94		25 - 150	11/08/19 14:30	12/20/19 20:37	1
d3-NMeFOSAA	73		25 - 150	11/08/19 14:30	12/20/19 20:37	1
d5-NEtFOSAA	103		25 - 150	11/08/19 14:30	12/20/19 20:37	1
M2-6:2 FTS	182	*	25 - 150	11/08/19 14:30	12/20/19 20:37	1
M2-8:2 FTS	100		25 - 150	11/08/19 14:30	12/20/19 20:37	1
M2-4:2 FTS	185	*	25 - 150	11/08/19 14:30	12/20/19 20:37	1
13C3 HFPO-DA	89		25 - 150	11/08/19 14:30	12/20/19 20:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	129		50 - 150	11/08/19 14:30	12/20/19 20:37	1
13C8 PFOS	92		50 - 150	11/08/19 14:30	12/20/19 20:37	1

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanoic acid (PFOA)	**2.67**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
8:2 FTS	**1.31**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
HFPO-DA (GenX)	**1.45**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C5 PFPeA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFHpA	*100*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFOA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C5 PFNA	*100*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFDA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFUnA	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
18O2 PFHxS	*106*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C4 PFOS	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
d5-NEtFOSAA	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-6:2 FTS	*124*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-8:2 FTS	*124*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
M2-4:2 FTS	*108*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:21*	*1*

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.11**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoropentanoic acid (PFPeA)	**1.67**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorohexanoic acid (PFHxA)	**45.7**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoroheptanoic acid (PFHpA)	**74.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanoic acid (PFOA)	**26.6**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorodecanoic acid (PFDA)	**24.3**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1321,1322 R3 M0010 BH
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17067-12
Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorobutanesulfonic acid (PFBS)	**5.75**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.60**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
HFPO-DA (GenX)	**2.78**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C5 PFPeA	*60*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFHxA	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFHpA	*71*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFOA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C5 PFNA	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFDA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFUnA	*83*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFDoA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C2 PFTeDA	*67*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
18O2 PFHxS	*83*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C8 FOSA	*52*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
d3-NMeFOSAA	*79*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
M2-6:2 FTS	*139*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
M2-4:2 FTS	*164*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*
13C3 HFPO-DA	*60*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:47*	*1*

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	98		50 - 150	11/08/19 14:30	12/20/19 20:47	1
13C8 PFOS	84		50 - 150	11/08/19 14:30	12/20/19 20:47	1

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanoic acid (PFOA)	**1.73**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
Perfluorooctanesulfonamide (FOSA)	**1.73**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
6:2 FTS	**1.53**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
HFPO-DA (GenX)	**2.79**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 00:42	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C5 PFPeA	101		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFHxA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFHpA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFOA	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C5 PFNA	114		25 - 150	11/07/19 13:00	11/17/19 00:42	1

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFUnA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C2 PFTeDA	114		25 - 150	11/07/19 13:00	11/17/19 00:42	1
18O2 PFHxS	121		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C4 PFOS	108		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C8 FOSA	107		25 - 150	11/07/19 13:00	11/17/19 00:42	1
d3-NMeFOSAA	91		25 - 150	11/07/19 13:00	11/17/19 00:42	1
d5-NEtFOSAA	89		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-6:2 FTS	130		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-8:2 FTS	113		25 - 150	11/07/19 13:00	11/17/19 00:42	1
M2-4:2 FTS	125		25 - 150	11/07/19 13:00	11/17/19 00:42	1
13C3 HFPO-DA	96		25 - 150	11/07/19 13:00	11/17/19 00:42	1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	0.09	X	50 - 150	11/07/19 13:00	01/09/20 15:18	1
13C8 PFOS	0	X	50 - 150	11/07/19 13:00	01/09/20 15:18	1

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.20**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 09:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFHxA	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFHpA	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C5 PFNA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFUnA	*87*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFDoA	*96*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C2 PFTeDA	*100*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
d5-NEtFOSAA	*108*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*
13C3 HFPO-DA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 09:23*	*1*

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.38**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoropentanoic acid (PFPeA)	**1.80**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorohexanoic acid (PFHxA)	**51.3**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoroheptanoic acid (PFHpA)	**77.4**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanoic acid (PFOA)	**25.5**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorodecanoic acid (PFDA)	**25.1**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE
Lab Sample ID: 140-17067-15
Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorobutanesulfonic acid (PFBS)	**6.62**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanesulfonic acid (PFOS)	**1.92**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
HFPO-DA (GenX)	**3.16**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 20:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*62*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C5 PFPeA	*73*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFHxA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFHpA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFOA	*100*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C5 PFNA	*90*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFDA	*87*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFUnA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFDoA	*94*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
18O2 PFHxS	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C4 PFOS	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C8 FOSA	*87*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-6:2 FTS	*174*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
M2-4:2 FTS	*165*	*	*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*
13C3 HFPO-DA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 20:57*	*1*

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	122		50 - 150	11/08/19 14:30	12/20/19 20:57	1
13C8 PFOS	84		50 - 150	11/08/19 14:30	12/20/19 20:57	1

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanoic acid (PFOA)	**2.27**	**H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
8:2 FTS	**1.66**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
HFPO-DA (GenX)	**1.25**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	91		25 - 150	11/08/19 14:30	11/21/19 21:30	1
13C5 PFPeA	90		25 - 150	11/08/19 14:30	11/21/19 21:30	1
13C2 PFHxA	95		25 - 150	11/08/19 14:30	11/21/19 21:30	1
13C4 PFHpA	97		25 - 150	11/08/19 14:30	11/21/19 21:30	1
13C4 PFOA	96		25 - 150	11/08/19 14:30	11/21/19 21:30	1

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFDA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFUnA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFDoA	*99*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-8:2 FTS	*110*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
M2-4:2 FTS	*109*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*
13C3 HFPO-DA	*84*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:30*	*1*

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.48**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorohexanoic acid (PFHxA)	**1.38**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanoic acid (PFOA)	**1.74**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
HFPO-DA (GenX)	**2.26**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C5 PFPeA	*66*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFHxA	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFHpA	*74*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFOA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C5 PFNA	*65*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFDA	*55*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFUnA	*55*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFDoA	*54*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C2 PFTeDA	*50*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
18O2 PFHxS	*69*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C4 PFOS	*59*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C8 FOSA	*25*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
d3-NMeFOSAA	*52*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
d5-NEtFOSAA	*51*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-8:2 FTS	*57*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C3 HFPO-DA	*70*		*25 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*89*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*
13C8 PFOS	*58*		*50 - 150*	*11/08/19 14:30*	*12/20/19 21:07*	*1*

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.77**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
HFPO-DA (GenX)	**1.02**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 01:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C5 PFPeA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFHxA	*102*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFHpA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFOA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C5 PFNA	*114*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFDA	*112*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFUnA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFDoA	*118*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C2 PFTeDA	*117*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C4 PFOS	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C8 FOSA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-6:2 FTS	*126*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-8:2 FTS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
M2-4:2 FTS	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*
13C3 HFPO-DA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:02*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.03*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 15:38*	*1*
13C8 PFOS	*0.005*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 15:38*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
HFPO-DA (GenX)	**2.63**	**H**	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	12/06/19 10:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C5 PFPeA	*94*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFHxA	*99*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C4 PFHpA	*95*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C4 PFOA	*97*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C5 PFNA	*96*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFDA	*94*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFUnA	*98*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
18O2 PFHxS	*92*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C4 PFOS	*91*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
13C8 FOSA	*93*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*
d3-NMeFOSAA	*109*		*25 - 150*	*11/08/19 14:30*	*12/06/19 10:13*	*1*

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	116		25 - 150	11/08/19 14:30	12/06/19 10:13	1
M2-6:2 FTS	103		25 - 150	11/08/19 14:30	12/06/19 10:13	1
M2-8:2 FTS	108		25 - 150	11/08/19 14:30	12/06/19 10:13	1
M2-4:2 FTS	97		25 - 150	11/08/19 14:30	12/06/19 10:13	1
13C3 HFPO-DA	93		25 - 150	11/08/19 14:30	12/06/19 10:13	1

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.35**	**H B**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorohexanoic acid (PFHxA)	**1.10**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanoic acid (PFOA)	**2.32**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
HFPO-DA (GenX)	**5.26**	**H**	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 21:17	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/19/19 09:30

Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	71		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C5 PFPeA	73		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C2 PFHxA	83		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C4 PFHpA	80		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C4 PFOA	88		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C5 PFNA	74		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C2 PFDA	69		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C2 PFUnA	68		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C2 PFDoA	68		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C2 PFTeDA	61		25 - 150	11/08/19 14:30	12/20/19 21:17	1
18O2 PFHxS	67		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C4 PFOS	60		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C8 FOSA	73		25 - 150	11/08/19 14:30	12/20/19 21:17	1
d3-NMeFOSAA	66		25 - 150	11/08/19 14:30	12/20/19 21:17	1
d5-NEtFOSAA	72		25 - 150	11/08/19 14:30	12/20/19 21:17	1
M2-6:2 FTS	118		25 - 150	11/08/19 14:30	12/20/19 21:17	1
M2-8:2 FTS	69		25 - 150	11/08/19 14:30	12/20/19 21:17	1
M2-4:2 FTS	126		25 - 150	11/08/19 14:30	12/20/19 21:17	1
13C3 HFPO-DA	79		25 - 150	11/08/19 14:30	12/20/19 21:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	111		50 - 150	11/08/19 14:30	12/20/19 21:17	1
13C8 PFOS	65		50 - 150	11/08/19 14:30	12/20/19 21:17	1

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)											
Lab Sample ID	Client Sample ID	13C8PFOA (50-150)	PFOS (50-150)										
140-17067-2	E-1307,1308 R1 M0010 BH	103	85										
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	0.05 X	0 X										
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	129	92										
140-17067-12	E-1321,1322 R3 M0010 BH	98	84										
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	0.09 X	0 X										
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	122	84										
140-17067-22	A-6614,6615 R5 M0010 BH	89	58										
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	0.03 X	0.005 X										
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	111	65										

Surrogate Legend

13C8PFOA = 13C8 PFOA

PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17067-1	E-1305,1306 R1 M0010 FH	103	101	108	106	108	106	107	110
140-17067-2	E-1307,1308 R1 M0010 BH	52	60	84	76	91	84	78	86
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	114	111	115	124	120	128	124	126
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	90	86	91	90	93	88	89	89
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	65	72	94	92	104	101	84	92
140-17067-11	E-1319,1320 R3 M0010 FH	92	94	98	100	98	100	98	103
140-17067-12	E-1321,1322 R3 M0010 BH	49	60	80	71	84	81	73	83
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	99	101	108	108	108	114	109	109
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	86	85	90	88	92	89	86	87
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	62	73	93	85	100	90	87	93
140-17067-21	A-6612,6613 R5 M0010 FH	91	90	95	97	96	96	94	99
140-17067-22	A-6614,6615 R5 M0010 BH	65	66	81	74	78	65	55	55
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	100	98	102	113	111	114	112	111
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	95	94	99	95	97	96	94	98
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	71	73	83	80	88	74	69	68
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-336904/2-C	Lab Control Sample	102	98	103	103	97	93	94	91
LCS 320-336904/2-C	Lab Control Sample	99	97	98	100	97	99	86	96
LCS 320-336904/3-C	Lab Control Sample	101	94	103	102	96	92	94	88
LCS 320-336904/3-C	Lab Control Sample	85	85	92	87	90	86	73	82
LCS 320-336904/4-C	Lab Control Sample	99	95	101	96	94	91	94	90
LCS 320-336904/4-C	Lab Control Sample	89	86	89	93	93	85	77	84
LCS 320-336962/2-C	Lab Control Sample	97	96	99	106	103	101	100	105
LCS 320-336962/3-C	Lab Control Sample	95	95	98	105	100	96	99	101
LCS 320-336962/4-C	Lab Control Sample	96	94	100	103	100	98	98	101
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-336904/1-C	Method Blank	96	91	98	100	93	88	90	87
MB 320-336904/1-C	Method Blank	86	85	89	91	93	91	77	86
MB 320-336962/1-C	Method Blank	98	94	104	105	102	98	97	101

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-1	E-1305,1306 R1 M0010 FH	99	104	111	98	99	68	111	144
140-17067-2	E-1307,1308 R1 M0010 BH	92	77	85	90	53	75	92	150
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	132	127	135	120	120	106	118	176 *
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	97	98	89	84	88	102	109	89

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17067-5	E-1311 R1 M0010 BREAKTHRC	96	89	101	94	94	73	103	182 *
140-17067-11	E-1319,1320 R3 M0010 FH	102	90	106	91	89	93	110	124
140-17067-12	E-1321,1322 R3 M0010 BH	86	67	83	85	52	79	85	139
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	109	114	121	108	107	91	89	130
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	96	100	88	85	89	98	108	92
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESI TUBE	94	78	85	86	87	89	102	174 *
140-17067-21	A-6612,6613 R5 M0010 FH	99	94	101	89	89	88	101	112
140-17067-22	A-6614,6615 R5 M0010 BH	54	50	69	59	25	52	51	97
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	118	117	116	107	106	93	100	126
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	104	104	92	91	93	109	116	103
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	68	61	67	60	73	66	72	118
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-336904/2-C	Lab Control Sample	100	98	103	86	79	87	93	114
LCS 320-336904/2-C	Lab Control Sample	97	94	99	94	86	101	109	133
LCS 320-336904/3-C	Lab Control Sample	93	88	96	79	75	85	93	104
LCS 320-336904/3-C	Lab Control Sample	82	83	77	76	73	83	91	108
LCS 320-336904/4-C	Lab Control Sample	95	94	94	82	77	85	95	103
LCS 320-336904/4-C	Lab Control Sample	89	85	84	83	80	87	96	115
LCS 320-336962/2-C	Lab Control Sample	108	102	112	94	93	92	102	96
LCS 320-336962/3-C	Lab Control Sample	104	97	109	92	92	88	103	93
LCS 320-336962/4-C	Lab Control Sample	103	100	105	96	95	93	101	89
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-336904/1-C	Method Blank	93	90	89	78	78	80	91	105
MB 320-336904/1-C	Method Blank	88	88	80	81	78	89	100	127
MB 320-336962/1-C	Method Blank	102	98	109	97	96	93	104	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)					
140-17067-1	E-1305,1306 R1 M0010 FH	167 *	129	83					
140-17067-2	E-1307,1308 R1 M0010 BH	103	156 *	77					
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	135	131	121					
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	94	88	87					
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESI TUBE	100	185 *	89					
140-17067-11	E-1319,1320 R3 M0010 FH	124	108	76					
140-17067-12	E-1321,1322 R3 M0010 BH	90	164 *	60					
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	113	125	96					
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	93	90	97					

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-1
Project/Site: M0010 Field Samples (MeOH)

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

Matrix: Air
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17067-15	E-1325 R3 M0010 BREAKTHRC	92	165 *	91
140-17067-21	A-6612,6613 R5 M0010 FH	110	109	84
140-17067-22	A-6614,6615 R5 M0010 BH	57	131	70
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	116	103	103
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	108	97	93
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESI TUBE	69	126	79
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112
LCS 320-336668/4-B	Lab Control Sample	98	90	118
LCS 320-336904/2-C	Lab Control Sample	107	125	85
LCS 320-336904/2-C	Lab Control Sample	99	147	93
LCS 320-336904/3-C	Lab Control Sample	97	109	94
LCS 320-336904/3-C	Lab Control Sample	79	115	81
LCS 320-336904/4-C	Lab Control Sample	106	108	83
LCS 320-336904/4-C	Lab Control Sample	88	126	90
LCS 320-336962/2-C	Lab Control Sample	90	98	86
LCS 320-336962/3-C	Lab Control Sample	84	99	91
LCS 320-336962/4-C	Lab Control Sample	80	95	85
MB 320-336668/1-B	Method Blank	84	93	113
MB 320-336904/1-C	Method Blank	109	110	81
MB 320-336904/1-C	Method Blank	80	117	84
MB 320-336962/1-C	Method Blank	83	96	91

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
18O2 PFHxS	*124*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOS	*108*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C8 FOSA	*105*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-8:2 FTS	84		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-4:2 FTS	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C3 HFPO-DA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	108		25 - 150
13C2 PFHxA	107		25 - 150
13C4 PFHpA	112		25 - 150
13C4 PFOA	109		25 - 150
13C5 PFNA	112		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	112		25 - 150
13C2 PFDoA	116		25 - 150
13C2 PFTeDA	119		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	111		25 - 150
13C8 FOSA	104		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	100		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	106		25 - 150

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.775		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.955		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.584		ng/Sample		92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.746		ng/Sample		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.117		ng/Sample		96	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.036		ng/Sample		97	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.134		ng/Sample		95	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.489		ng/Sample		98	68 - 128

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	10.0	9.940		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	9.906		ng/Sample		99	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.768		ng/Sample		98	65 - 125
4:2 FTS	9.34	9.915		ng/Sample		106	70 - 130
6:2 FTS	9.48	9.822		ng/Sample		104	66 - 126
8:2 FTS	9.58	9.688		ng/Sample		101	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.698		ng/Sample		103	70 - 130
HFPO-DA (GenX)	10.0	10.60		ng/Sample		106	70 - 130
F-53B Major	9.32	9.194		ng/Sample		99	70 - 130
F-53B Minor	9.42	9.238		ng/Sample		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	9.275		ng/Sample		93	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	8.145		ng/Sample		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.875		ng/Sample		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	8.135		ng/Sample		89	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.753		ng/Sample		102	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.139		ng/Sample		98	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.030		ng/Sample		94	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.069		ng/Sample		94	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.913		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.16		ng/Sample		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.50		ng/Sample		105	65 - 125
4:2 FTS	9.34	10.04		ng/Sample		108	70 - 130
6:2 FTS	9.48	9.599		ng/Sample		101	66 - 126
8:2 FTS	9.58	10.33		ng/Sample		108	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	10.05		ng/Sample		107	70 - 130
HFPO-DA (GenX)	10.0	10.37		ng/Sample		104	70 - 130
F-53B Major	9.32	9.671		ng/Sample		104	70 - 130
F-53B Minor	9.42	8.429		ng/Sample		89	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*99*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	*98*		*25 - 150*
M2-4:2 FTS	*90*		*25 - 150*
13C3 HFPO-DA	*118*		*25 - 150*

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.053		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/04/19 19:44	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*96*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFPeA	*91*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFHpA	*100*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/08/19 14:30*	*12/04/19 19:44*	*1*

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	90		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFUnA	87		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFDoA	93		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C2 PFTeDA	90		25 - 150	11/08/19 14:30	12/04/19 19:44	1
18O2 PFHxS	89		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C4 PFOS	78		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C8 FOSA	78		25 - 150	11/08/19 14:30	12/04/19 19:44	1
d3-NMeFOSAA	80		25 - 150	11/08/19 14:30	12/04/19 19:44	1
d5-NEtFOSAA	91		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-6:2 FTS	105		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-8:2 FTS	109		25 - 150	11/08/19 14:30	12/04/19 19:44	1
M2-4:2 FTS	110		25 - 150	11/08/19 14:30	12/04/19 19:44	1
13C3 HFPO-DA	81		25 - 150	11/08/19 14:30	12/04/19 19:44	1

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.063		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1

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

Lab Sample ID: MB 320-336904/1-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336904

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Major	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/08/19 14:30	12/20/19 19:47	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFHxA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFDA	*77*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFUnA	*86*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFDoA	*88*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
18O2 PFHxS	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C4 PFOS	*81*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C8 FOSA	*78*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-6:2 FTS	*127*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-8:2 FTS	*80*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
M2-4:2 FTS	*117*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*
13C3 HFPO-DA	*84*		*25 - 150*	*11/08/19 14:30*	*12/20/19 19:47*	*1*

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.81		ng/Sample		102	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.58		ng/Sample		99	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.91		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.44		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	42.65		ng/Sample		107	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	40.36		ng/Sample		101	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.20		ng/Sample		96	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.20		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.76		ng/Sample		95	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.87		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.78		ng/Sample		93	60 - 140

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.76		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.56		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	41.49		ng/Sample		108	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.70		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	45.17		ng/Sample		113	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.68		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.56		ng/Sample		106	60 - 140
4:2 FTS	37.4	40.72		ng/Sample		109	60 - 140
6:2 FTS	37.9	39.51		ng/Sample		104	60 - 140
8:2 FTS	38.3	43.98		ng/Sample		115	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.90		ng/Sample		130	60 - 140
HFPO-DA (GenX)	40.0	43.61		ng/Sample		109	60 - 140
F-53B Major	37.3	42.74		ng/Sample		115	60 - 140
F-53B Minor	37.7	35.43		ng/Sample		94	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*102*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*93*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*91*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*103*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
M2-6:2 FTS	*114*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
M2-4:2 FTS	*125*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.59		ng/Sample		101	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.57		ng/Sample		104	60 - 140

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.76		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	43.52		ng/Sample		109	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.23		ng/Sample		101	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.17		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.58		ng/Sample		99	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.85		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	42.04		ng/Sample		105	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.56		ng/Sample		96	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.00		ng/Sample		95	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	37.12		ng/Sample		105	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.15		ng/Sample		104	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.33		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.27		ng/Sample		114	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.41		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.23		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.44		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.23		ng/Sample		103	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.47		ng/Sample		104	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.85		ng/Sample		92	60 - 140
4:2 FTS	37.4	31.94		ng/Sample		85	60 - 140
6:2 FTS	37.9	31.58		ng/Sample		83	60 - 140
8:2 FTS	38.3	37.00		ng/Sample		97	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.10		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	47.25		ng/Sample		118	60 - 140
F-53B Major	37.3	44.52		ng/Sample		119	60 - 140
F-53B Minor	37.7	37.20		ng/Sample		99	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*99*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/2-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFTeDA	*94*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*94*		*25 - 150*
13C8 FOSA	*86*		*25 - 150*
d3-NMeFOSAA	*101*		*25 - 150*
d5-NEtFOSAA	*109*		*25 - 150*
M2-6:2 FTS	*133*		*25 - 150*
M2-8:2 FTS	*99*		*25 - 150*
M2-4:2 FTS	*147*		*25 - 150*
13C3 HFPO-DA	*93*		*25 - 150*

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.44		ng/Sample		101	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.97		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.26		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.07		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	39.61		ng/Sample		99	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.35		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.26		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.48		ng/Sample		96	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	42.11		ng/Sample		105	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.72		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	34.65		ng/Sample		87	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.87		ng/Sample		99	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.06		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.18		ng/Sample		94	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.11		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.86		ng/Sample		99	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.54		ng/Sample		106	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.00		ng/Sample		99	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	46.50		ng/Sample		116	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.63		ng/Sample		104	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.70		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.94		ng/Sample		112	60 - 140

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

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	38.87		ng/Sample		102	60 - 140
8:2 FTS	38.3	44.56		ng/Sample		116	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	52.68		ng/Sample		140	60 - 140
HFPO-DA (GenX)	40.0	40.33		ng/Sample		101	60 - 140
F-53B Major	37.3	44.17		ng/Sample		118	60 - 140
F-53B Minor	37.7	34.93		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*101*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*102*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*92*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*75*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*93*		*25 - 150*
M2-6:2 FTS	*104*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*94*		*25 - 150*

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.56		ng/Sample		104	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.96		ng/Sample		102	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.20		ng/Sample		103	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.88		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.36		ng/Sample		96	60 - 140
Perfluorononanoic acid (PFNA)	40.0	45.59		ng/Sample		114	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.24		ng/Sample		101	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.08		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.52		ng/Sample		96	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.74		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	35.56		ng/Sample		89	60 - 140

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

Lab Sample ID: LCS 320-336904/3-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	36.61		ng/Sample		104	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.55		ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.77		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.79		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	37.52		ng/Sample		101	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	34.28		ng/Sample		89	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	36.19		ng/Sample		94	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	43.00		ng/Sample		108	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.02		ng/Sample		100	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.39		ng/Sample		93	60 - 140
4:2 FTS	37.4	31.90		ng/Sample		85	60 - 140
6:2 FTS	37.9	35.43		ng/Sample		93	60 - 140
8:2 FTS	38.3	35.82		ng/Sample		93	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.18		ng/Sample		125	60 - 140
HFPO-DA (GenX)	40.0	46.70		ng/Sample		117	60 - 140
F-53B Major	37.3	42.11		ng/Sample		113	60 - 140
F-53B Minor	37.7	34.93		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*85*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4 PFHpA	*87*		*25 - 150*
13C4 PFOA	*90*		*25 - 150*
13C5 PFNA	*86*		*25 - 150*
13C2 PFDA	*73*		*25 - 150*
13C2 PFUnA	*82*		*25 - 150*
13C2 PFDoA	*82*		*25 - 150*
13C2 PFTeDA	*83*		*25 - 150*
18O2 PFHxS	*77*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*73*		*25 - 150*
d3-NMeFOSAA	*83*		*25 - 150*
d5-NEtFOSAA	*91*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*79*		*25 - 150*
M2-4:2 FTS	*115*		*25 - 150*
13C3 HFPO-DA	*81*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.20		ng/Sample		103	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.01		ng/Sample		95	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.09		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.03		ng/Sample		105	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.67		ng/Sample		97	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.77		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.45		ng/Sample		104	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	37.79		ng/Sample		94	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.35		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.33		ng/Sample		91	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	35.42		ng/Sample		100	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.86		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.61		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.56		ng/Sample		120	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.16		ng/Sample		97	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.96		ng/Sample		101	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.74		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	44.75		ng/Sample		112	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.84		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.82		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.65		ng/Sample		114	60 - 140
6:2 FTS	37.9	39.12		ng/Sample		103	60 - 140
8:2 FTS	38.3	40.04		ng/Sample		104	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	47.63		ng/Sample		126	60 - 140
HFPO-DA (GenX)	40.0	45.56		ng/Sample		114	60 - 140
F-53B Major	37.3	42.67		ng/Sample		114	60 - 140
F-53B Minor	37.7	36.73		ng/Sample		97	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 343208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	90		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	94		25 - 150
18O2 PFHxS	94		25 - 150
13C4 PFOS	82		25 - 150
13C8 FOSA	77		25 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	95		25 - 150
M2-6:2 FTS	103		25 - 150
M2-8:2 FTS	106		25 - 150
M2-4:2 FTS	108		25 - 150
13C3 HFPO-DA	83		25 - 150

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	40.63		ng/Sample		102	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.69		ng/Sample		104	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	42.34		ng/Sample		106	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	39.79		ng/Sample		99	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.17		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	44.98		ng/Sample		112	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.29		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.34		ng/Sample		96	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.36		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.84		ng/Sample		92	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	36.99		ng/Sample		105	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.74		ng/Sample		111	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.54		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.16		ng/Sample		113	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.26		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.01		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.44		ng/Sample		100	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.83		ng/Sample		107	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.47		ng/Sample		99	60 - 140

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

Lab Sample ID: LCS 320-336904/4-C
Matrix: Air
Analysis Batch: 347688

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.36		ng/Sample		98	60 - 140
4:2 FTS	37.4	33.79		ng/Sample		90	60 - 140
6:2 FTS	37.9	31.65		ng/Sample		83	60 - 140
8:2 FTS	38.3	34.97		ng/Sample		91	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.09		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	44.66		ng/Sample		112	60 - 140
F-53B Major	37.3	39.10		ng/Sample		105	60 - 140
F-53B Minor	37.7	38.46		ng/Sample		102	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C5 PFPeA	*86*		*25 - 150*
13C2 PFHxA	*89*		*25 - 150*
13C4 PFHpA	*93*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*77*		*25 - 150*
13C2 PFUnA	*84*		*25 - 150*
13C2 PFDoA	*89*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*83*		*25 - 150*
13C8 FOSA	*80*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*96*		*25 - 150*
M2-6:2 FTS	*115*		*25 - 150*
M2-8:2 FTS	*88*		*25 - 150*
M2-4:2 FTS	*126*		*25 - 150*
13C3 HFPO-DA	*90*		*25 - 150*

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanoic acid (PFOA)	1.299	I	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

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

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
6:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
8:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
HFPO-DA (GenX)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Major	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Minor	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C5 PFPeA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFHxA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFHpA	*105*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFOA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C5 PFNA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFDA	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFUnA	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
18O2 PFHxS	*109*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C4 PFOS	*97*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C8 FOSA	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-6:2 FTS	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-8:2 FTS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
M2-4:2 FTS	*96*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*
13C3 HFPO-DA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 20:32*	*1*

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	47.47		ng/Sample		119	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.17		ng/Sample		103	60 - 140

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	41.57		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.60		ng/Sample		104	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	41.85		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.53		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.14		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.55		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.32		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.61		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.38		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	35.84		ng/Sample		96	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.73		ng/Sample		84	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.13		ng/Sample		108	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	40.15		ng/Sample		108	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.25		ng/Sample		105	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.58		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.01		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.65		ng/Sample		104	60 - 140
4:2 FTS	37.4	38.47		ng/Sample		103	60 - 140
6:2 FTS	37.9	40.44		ng/Sample		107	60 - 140
8:2 FTS	38.3	39.07		ng/Sample		102	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.26		ng/Sample		120	60 - 140
HFPO-DA (GenX)	40.0	49.23		ng/Sample		123	60 - 140
F-53B Major	37.3	41.87		ng/Sample		112	60 - 140
F-53B Minor	37.7	37.66		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*106*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFTeDA	102		25 - 150
18O2 PFHxS	112		25 - 150
13C4 PFOS	94		25 - 150
13C8 FOSA	93		25 - 150
d3-NMeFOSAA	92		25 - 150
d5-NEtFOSAA	102		25 - 150
M2-6:2 FTS	96		25 - 150
M2-8:2 FTS	90		25 - 150
M2-4:2 FTS	98		25 - 150
13C3 HFPO-DA	86		25 - 150

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.00		ng/Sample		115	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.98		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.87		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.82		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.67		ng/Sample		102	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.80		ng/Sample		110	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.94		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.11		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.91		ng/Sample		97	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	40.19		ng/Sample		100	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.19		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.75		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.50		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.60		ng/Sample		107	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	41.14		ng/Sample		111	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	41.02		ng/Sample		107	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.78		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.83		ng/Sample		107	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.01		ng/Sample		105	60 - 140
4:2 FTS	37.4	37.09		ng/Sample		99	60 - 140

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

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	43.24		ng/Sample		114	60 - 140
8:2 FTS	38.3	40.76		ng/Sample		106	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.97		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	44.57		ng/Sample		111	60 - 140
F-53B Major	37.3	43.37		ng/Sample		116	60 - 140
F-53B Minor	37.7	37.89		ng/Sample		101	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*96*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*104*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*92*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*99*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.48		ng/Sample		116	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.46		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.21		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.25		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	42.08		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.34		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.66		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.00		ng/Sample		100	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	41.39		ng/Sample		103	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.22		ng/Sample		96	60 - 140

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.97		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.49		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.15		ng/Sample		103	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	38.87		ng/Sample		105	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.54		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.18		ng/Sample		104	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	40.92		ng/Sample		102	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.09		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.00		ng/Sample		103	60 - 140
4:2 FTS	37.4	36.89		ng/Sample		99	60 - 140
6:2 FTS	37.9	41.61		ng/Sample		110	60 - 140
8:2 FTS	38.3	40.96		ng/Sample		107	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.08		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	49.79		ng/Sample		124	60 - 140
F-53B Major	37.3	41.22		ng/Sample		111	60 - 140
F-53B Minor	37.7	37.49		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*100*		*25 - 150*
18O2 PFHxS	*105*		*25 - 150*
13C4 PFOS	*96*		*25 - 150*
13C8 FOSA	*95*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*101*		*25 - 150*
M2-6:2 FTS	*89*		*25 - 150*
M2-8:2 FTS	*80*		*25 - 150*
M2-4:2 FTS	*95*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

LCMS

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

Prep Batch: 336904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	None	
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	None	
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	None	
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	None	
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
MB 320-336904/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	None	

Prep Batch: 336962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	None	
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	None	
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	None	
MB 320-336962/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	None	

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

LCMS

Cleanup Batch: 337396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	Split	336962
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	Split	336962
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	Split	336962
MB 320-336962/1-C	Method Blank	Total/NA	Air	Split	336962
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Split	336962

Cleanup Batch: 338182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	Split	336904
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	Split	336904
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	Split	336904
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Split	336904
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	336904
MB 320-336904/1-C	Method Blank	Total/NA	Air	Split	336904
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Split	336904
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Split	336904

Cleanup Batch: 338209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	Preparation	337396
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	Preparation	337396
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	Preparation	337396
MB 320-336962/1-C	Method Blank	Total/NA	Air	Preparation	337396
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Preparation	337396

Cleanup Batch: 338718

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	Preparation	338182
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	Preparation	338182
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338182
MB 320-336904/1-C	Method Blank	Total/NA	Air	Preparation	338182
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	Preparation	338182
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	Preparation	338182
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	Preparation	338182

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

LCMS

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-1	E-1305,1306 R1 M0010 FH	Total/NA	Air	537 (modified)	338209
140-17067-11	E-1319,1320 R3 M0010 FH	Total/NA	Air	537 (modified)	338209
140-17067-21	A-6612,6613 R5 M0010 FH	Total/NA	Air	537 (modified)	338209
MB 320-336962/1-C	Method Blank	Total/NA	Air	537 (modified)	338209
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209

Analysis Batch: 343208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336904/1-C	Method Blank	Total/NA	Air	537 (modified)	338718
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718

Analysis Batch: 343817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RIN	Total/NA	Air	537 (modified)	338718

Analysis Batch: 347688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-2	E-1307,1308 R1 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718
140-17067-12	E-1321,1322 R3 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718
140-17067-22	A-6614,6615 R5 M0010 BH	Total/NA	Air	537 (modified)	338718
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338718
MB 320-336904/1-C	Method Blank	Total/NA	Air	537 (modified)	338718
LCS 320-336904/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718
LCS 320-336904/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338718

Analysis Batch: 349852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-3 - RA	E-1309 R1 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880
140-17067-13 - RA	E-1323 R3 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880

LCMS (Continued)

Analysis Batch: 349852 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17067-23 - RA	A-6616 R5 M0010 IMP 1,2&3 COND	Total/NA	Air	537 (modified)	336880

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1305,1306 R1 M0010 FH

Lab Sample ID: 140-17067-1

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	53 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:11	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: E-1307,1308 R1 M0010 BH

Lab Sample ID: 140-17067-2

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:27	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1309 R1 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-3

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	350 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			350 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:23	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	350 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		350 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 14:58	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-4

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 08:43	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-5

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:37	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1319,1320 R3 M0010 FH

Lab Sample ID: 140-17067-11

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:21	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: E-1321,1322 R3 M0010 BH

Lab Sample ID: 140-17067-12

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1323 R3 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-13

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	425 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			425 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:42	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	425 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		425 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:18	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-14

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 09:23	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-15

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6612,6613 R5 M0010 FH

Lab Sample ID: 140-17067-21

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:30	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: A-6614,6615 R5 M0010 BH

Lab Sample ID: 140-17067-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: A-6616 R5 M0010 IMP 1,2&3 COND

Lab Sample ID: 140-17067-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	415 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			415 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:02	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25 Sample	415 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		415 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 15:38	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE

Lab Sample ID: 140-17067-24

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343817	12/06/19 10:13	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE

Lab Sample ID: 140-17067-25

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 21:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank

Lab Sample ID: MB 320-336668/1-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336904/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:44	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 19:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336962/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:32	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 19:54	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 19:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:04	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343208	12/04/19 20:14	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336904/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	336904	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338182	11/13/19 09:15		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338718	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347688	12/20/19 20:17	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:42	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:51	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:01	S1M	TAL SAC
	Instrument ID: A12									

Laboratory References:

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17067-1
Project/Site: M0010 Field Samples (MeOH)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency
None = None
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 Field Samples (MeOH)

Job ID: 140-17067-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17067-1	E-1305,1306 R1 M0010 FH	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-2	E-1307,1308 R1 M0010 BH	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-3	E-1309 R1 M0010 IMP 1,2&3 COND	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-4	E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-5	E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/13/19 00:00	10/19/19 09:30	
140-17067-11	E-1319,1320 R3 M0010 FH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-12	E-1321,1322 R3 M0010 BH	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-13	E-1323 R3 M0010 IMP 1,2&3 COND	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-14	E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-15	E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/15/19 00:00	10/19/19 09:30	
140-17067-21	A-6612,6613 R5 M0010 FH	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-22	A-6614,6615 R5 M0010 BH	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-23	A-6616 R5 M0010 IMP 1,2&3 COND	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-24	A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE	Air	10/16/19 00:00	10/19/19 09:30	
140-17067-25	A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE	Air	10/16/19 00:00	10/19/19 09:30	

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Stack Testing for PFAS

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	

140-17067 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1305 R1 M0010 Filter (Combine with *E-1306*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1306 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *E-1305*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1307 R1 M0010 XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1308 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1307*)	1	10/13/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1309 R1 M0010 Impingers 1,2 & 3 Condensate	1	10/13/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1310 R1 M0010 Impinger Glassware MeOH Rinse	1	10/13/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1311 R1 M0010 Breakthrough XAD-2 Resin Tube	1	10/13/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1312 R2 M0010 Filter (Combine with *E-1313*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1313 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1312*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1314 R2 M0010 XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1315 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1314*)	2	10/14/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1316 R2 M0010 Impingers 1,2 & 3 Condensate X3	2	10/14/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1317 R2 M0010 Impinger Glassware MeOH Rinse X2	2	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1318 R2 M0010 Breakthrough XAD-2 Resin Tube	2	10/14/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1319 R3 M0010 Filter (Combine with *E-1320*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1320 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1319*)	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1321 R3 M0010 XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1322 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1321*	3	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1323 R3 M0010 Impingers 1,2 & 3 Condensate	3	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1324 R3 M0010 Impinger Glassware MeOH Rinse	3	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1325 R3 M0010 Breakthrough XAD-2 Resin Tube	3	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1326 R4 M0010 ~~Ambient Air~~ Filter (Combine with *E-1327*) Regular RUN Condition NOT Ambient Air	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1327 R4 M0010 ~~Ambient Air~~ Front Half of Filter Holder & Probe MeOH Rinse (Combine with *E-1326*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
E-1328 R4 M0010 ~~Ambient Air~~ XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
E-1329 R4 M0010 ~~Ambient Air~~ BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *E-1328*)	4	10/15/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
E-1330 R4 M0010 ~~Ambient Air~~ Impingers 1,2 & 3 Condensate	4	10/15/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
E-1331 R4 M0010 ~~Ambient Air~~ Impinger Glassware MeOH Rinse	4	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
E-1332 R4 M0010 ~~Ambient Air~~ Breakthrough XAD-2 Resin Tube	4	10/15/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Ambient Air Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3 ,5.2 ,4.2 / CT 5.5, 5.3 ,5.2 ,4.2 c
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO (VISTONY SEALS, 5 COOLERS FED EX # 776259922962 m FAS

Custody Transfer:

		Name	Company	Date/Time
Relinquished By:	Doug Gehl		ETA	10/17/19 11:32
Accepted By:	W.M. Hayes		AST	10/17/19 11:32
Relinquished By:	W.M. Hayes		AST	10/18/19 11:35
Accepted By:	Bryan Bowman		ESA KNX	10-19-19 09:30
Relinquished By:				
Accepted By:				
Relinquished By:				
Accepted By:				

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility
Scrubber By-Pass Testing for PFAS – Task .50

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

NOT SCRUBBER By pass - Regular Condition

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6605 R1 M0010 Filter (Combine with *A-6606*)	~~1~~	VOID Set-up as #5 RUN NOT completed		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6606 R1 M0010 FH of Filter Holder & Probe MeOH Rinse (Combine with *A-6605*)	1			125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6607 R1 M0010 XAD-2 Resin Tube	1			XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6608 R1 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6607*)	1	Void		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6609 R1 M0010 Impingers 1,2 & 3 Condensate	1			1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6610 R1 M0010 Impinger Glassware MeOH Rinse	1			250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6611 R1 M0010 Breakthrough XAD-2 Resin Tube	1			XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 R2 M0010 Filter (Combine with *A-6613*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6613 R2 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6612*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 R2 M0010 XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 R2 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6614*)	2 5 6 5	10/16/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 R2 M0010 Impingers 1,2 & 3 Condensate X3	2 5 6 5	10/16/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6617 R2 M0010 Impinger Glassware MeOH Rinse	2 5 6 5	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6618 R2 M0010 Breakthrough XAD-2 Resin Tube	2 5 6 5	10/16/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6619 R3 M0010 Filter (Combine with *A-6620*)	5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6620 R3 M0010 Front Half of Filter Holder & Probe MeOH Rinse (Combine with *A-6619*)	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6621 R3 M0010 XAD-2 Resin Tube	8 5 6	10/17/19		XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6622 R3 M0010 BH of Filter Holder & Coil Condenser MeOH Rinse (Combine with *A-6621*	8 5 6	10/17/19		125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6623 R3 M0010 Impingers 1,2 & 3 Condensate	8 5 6	10/17/19		1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6624 R3 M0010 Impinger Glassware MeOH Rinse	8 5 6	10/17/19		250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Train Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

X2

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require -ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6625 R3 M0010 Breakthrough XAD-2 Resin Tube	~~5~~ 6	10/17/19		XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2 / CT 5.5, 5.3, 5.2, 4.2 C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX# 7776759422982m FDS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Colvill	ETA	10/17/19 11:40
Accepted By:	[signature]	AST	10/17/19 1:16
Relinquished By:	[signature]	AST	10/18/ 11:3
Accepted By:	[signature]	STAVX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
17067

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SG68 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 10-2-19

QA026R32.doc, 062719

1/20/2020

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019	Analysis Requested		Preservation Codes:
City: West Sacramento	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			Other:
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastetoid, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condons (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
~~E-1305-1306 R1 M0010 FH (140-17067-1)~~	10/13/19	Alaskan		Air			X			2	MeOH Fraction
~~E-1307,1308 R1 M0010 BH (140-17067-2)~~	10/13/19	Alaskan		Air				X		2	MeOH Fraction
E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3)	10/13/19	Alaskan		Air					X	2	MeOH Fraction
~~E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE~~ (140-17067-	10/13/19	Alaskan		Air				X		2	MeOH Fraction
~~E-1311 R1 M0010 BREAKTHROUGH XAD~~-2 RESIN TUBE (140-	10/13/19	Alaskan		Air				X		1	MeOH Fraction
~~E-1319,1320 R3 M0010 FH (140-17067-11)~~	10/15/19	Alaskan		Air			X			2	MeOH Fraction
E-1321,1322 R3 M0010 BH ~~(140-17067-12)~~	10/15/19	Alaskan		Air				X		2	MeOH Fraction
E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13)	10/15/19	Alaskan		Air					X	3	MeOH Fraction
~~E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE~~ (140-17067-	10/15/19	Alaskan		Air				X		4	MeOH Fraction

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 11-8-19 15:00	Company: ETA KNX	Received by:	Date/Time: 11/9/19 - 9:00	Company: ETA-SAC
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 104071	Cooler Temperature(s) °C and Other Remarks: 0.8°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (26 Analytes)	Total Number of containers	Special Instructions/Note:
~~E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-~~	10/15/19	Alaskan		Air					X		1	MeOH Fraction
~~A-6612,6613 R5 M0010 FH (140-17067-21)~~ *	10/16/19	Alaskan		Air				X			2	MeOH Fraction
~~A-6614,6615 R5~~ M0010 BH (140-17067-22)	10/16/19	Alaskan		Air					X		2	MeOH Fraction
~~A-6616 R5~~ M0010 IMP 1,2&3 COND (140-17067-23)	10/16/19	Alaskan		Air						X	3	MeOH Fraction
~~A-6617 R5~~ M0010 IMP ~~GLASSWARE MEOH~~ RINSE (140-17067-	10/16/19	Alaskan		Air					X		1	MeOH Fraction
~~A-6618 R5 M0010 BREAKTHROUGH XAD-2~~ RESIN TUBE (140-	10/16/19	Alaskan		Air					X		1	MeOH Fraction

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	11-8-19 15:00	ETA KNX	[signature]	11/9/19 - 9:00	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ~~Δ Yes~~ Δ No	Custody Seal No.: 1046071	Cooler Temperature(s) °C and Other Remarks: 0.8°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note)		Job #: 140-17067-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1312,1313 R2 M0010 FH (140-17067-6)	10/14/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
E-1314,1315 R2 M0010 BH (140-17067-7)	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8)	10/14/19	Alaskan		Air					X	3	MeOH Fraction, MeCl2 Extractions
E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE (140-17067-	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/14/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
E-1326,1327 R4 M0010 FH (140-17067-16)	10/15/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
E-1328,1329 R4 M0010 BH (140-17067-17)	10/15/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18)	10/15/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE (140-17067-	10/15/19	Alaskan		Air				X		3	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	11-8-19 15:00	ETA KNX		11/9/19 - 9:00	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1046071	Cooler Temperature(s) °C and Other Remarks: 0.8°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019	Analysis Requested		Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1332 R4 M0010 ~~BREAKTHROUGH XAD-2~~ RESIN TUBE (140-	10/15/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
~~A-6619,6620 R6 M0010 FH (140-17067-26)~~	10/17/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
~~A-6621,6622 R6 M0010 BH (140-17067-27)~~	10/17/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28)	10/17/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
~~A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE~~ (140-17067-	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
~~A-6625 R6 M0010 BREAKTHROUGH XAD-2~~ RESIN TUBE (140-	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
LCS 320 336668/2-B											
LCS 320 336668/3-B											
LCS 320 336668/4-B											

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	11-8-19 15:00	ETA KNX	[signature]	11/9/19 - 9:00	ETA-SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ▲Yes △ No	Custody Seal No.: 1046071	Cooler Temperature(s) °C and Other Remarks: 0.8°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 7 4
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019			Preservation Codes:
City: West Sacramento	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - Di Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1312,1313 R2 M0010 FH (140-17067-6)	10/14/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
E-1314,1315 R2 M0010 BH (140-17067-7)	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8)	10/14/19	Alaskan		Air					X	3	MeOH Fraction, MeCl2 Extractions
~~E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/14/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
E-1326,1327 R4 M0010 FH (140-17067-16)	10/15/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
E-1328,1329 R4 M0010 BH (140-17067-17)	10/15/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18)	10/15/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
~~E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/15/19	Alaskan		Air				X		3	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	11-1-19 14:00	ETA KNX		11/2/19 - 10:15	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ~~Δ Yes~~ Δ No	Custody Seal No.: 1046070	Cooler Temperature(s) °C and Other Remarks: OBS 0.4 Corr 0-8

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 4
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019	Analysis Requested		Preservation Codes:
City: West Sacramento	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/15/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6619,6620 R6 M0010 FH (140-17067-26)	10/17/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
A-6621,6622 R6 M0010 BH (140-17067-27)	10/17/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28)	10/17/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
~~A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
MB 320332969/1-C											
MB 320332701/1-C											
MB 320332801/1-B											

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	11-11-19 14:00	ETA KNX	[signature]	11/12/19 10:15	ETA-SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ~~Yes~~ ☐ No	Custody Seal No.: 1046070	Cooler Temperature(s) °C and Other Remarks: OBS 0.4 Corr 0.8

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here	Email:	Lab Contact:	Carrier:	4 of 4 COCs
Address	Tel/Fax:			Sampler:
City/State/Zip	Analysis Turnaround Time			For Lab Use Only:
Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
Fax	TAT if different from Below _____			Lab Sampling:
Project Name:	☐ 2 weeks			
Site:	☐ 1 week			Job / SDG No.:
P O #	☐ 2 days			
	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	See Attached	Sample Specific Notes:
LCS320332969/2-C									
LCS320332969/3-C									
LCS320332969/4-C									
LCS320332701/2-C									
LCS320332701/3-C									
LCS320332701/4-C									
LCS320332801/2-C									
LCS320332801/3-C									
LCS320332801/4-C									

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1046070		Cooler Temp. (°C): Obs'd: 0.4 Corr'd: 0.8		Therm ID No.: AK-11
Relinquished by:	Company: ETA-KNX	Date/Time: 11-11-19 14:00	Received by:	Company: ETA-SAC	Date/Time: 11/12/19-10:15
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1305,1306 R1 M0010 FH (140-17067-1)	10/13/19	Alaskan		Air			X			2	MeOH Fraction
~~E-1307,1308 R1 M0010 BH (140-17067-2)~~	10/13/19	Alaskan		Air				X		2	MeOH Fraction
~~E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3)~~	10/13/19	Alaskan		Air					X	2	MeOH Fraction
~~E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/13/19	Alaskan		Air				X		2	MeOH Fraction
E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/13/19	Alaskan		Air				X		1	MeOH Fraction
E-1319,1320 R3 M0010 FH (140-17067-11)	10/15/19	Alaskan		Air			X			2	MeOH Fraction
~~E-1324,1322 R3 M0010 BH (140-17067-12)~~	10/15/19	Alaskan		Air				X		2	MeOH Fraction
~~E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13)~~	10/15/19	Alaskan		Air					X	3	MeOH Fraction
~~E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/15/19	Alaskan		Air				X		4	MeOH Fraction

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11-13-19 15:00	FTA FWX		14 Nov 19 0910	ETAW Sac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☑ Yes ☐ No	Custody Seal No.: 1046043	Cooler Temperature(s) °C and Other Remarks: 4.5°c / 4.3°c

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/15/19	Alaskan		Air				X		1	MeOH Fraction
A-6612,6613 R5 M0010 FH (140-17067-21)	10/16/19	Alaskan		Air			X			2	MeOH Fraction
~~A-6614,6615 R5 M0010 BH (140-17067-22)~~	10/16/19	Alaskan		Air				X		2	MeOH Fraction
A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23)	10/16/19	Alaskan		Air					X	3	MeOH Fraction
A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE (140-17067-	10/16/19	Alaskan		Air				X		1	MeOH Fraction
~~A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-~~	10/16/19	Alaskan		Air				X		1	MeOH Fraction
MB 320 333081/1-C											
MB 320 333418/1-C											
MB 320 336921/1-C											

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11-13-19 15:00	ETA KNX		14 Nov 19 0910	ETA Sac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 1046043	Cooler Temperature(s) °C and Other Remarks: 4.5°C / 4.3°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler	Lab PM: Adkins, Courtney M	Carrier Tracking No(s)	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Preservation Codes:

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

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
✓ E-1312,1313 R2 M0010 FH (140-17067-6)	10/14/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
✓ E-1314,1315 R2 M0010 BH (140-17067-7)	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
~~E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8)~~	10/14/19	Alaskan		Air					X	3	MeOH Fraction, MeCl2 Extractions
E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE (140-17067-	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/14/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
✓ E-1326,1327 R4 M0010 FH (140-17067-16)	10/15/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
✓ E-1328,1329 R4 M0010 BH (140-17067-17)	10/15/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
~~E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18)~~	10/15/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE (140-17067-	10/15/19	Alaskan		Air				X		3	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	11-13-19 15:00	ETA KNX	[signature]	14 Nov 19 0910	ETA W Sac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 1046043	Cooler Temperature(s) °C and Other Remarks: 4.5°c / 4.3°c

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572 2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

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

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
~~F-1332-R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-~~	10/15/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6619,6620 R6 M0010 FH (140-17067-26)	10/17/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
A-6621,6622 R6 M0010 BH (140-17067-27)	10/17/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
~~A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28)~~	10/17/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
~~A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE (140-17067-~~	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	11-13-19 15:00	ETA KNX	[signature]	14 Nov 19 0910	ETAWSac
2						
3						

Custody Seals Intact: ☒ Yes ☐ No | Custody Seal No.: 1076043

Cooler Temperature(s) °C and Other Remarks: 4.5°C / 4.3°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here	Email:	Lab Contact:	Carrier:	_____ of _____ COCs
Address	Tel/Fax:			Sampler:
City/State/Zip	Analysis Turnaround Time			For Lab Use Only:
Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			Walk-in Client:
Fax	TAT if different from Below _____			Lab Sampling:
Project Name:	☐ 2 weeks			
Site:	☐ 1 week			Job / SDG No.:
P O #	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Sample Specific Notes:
LCS 320 333081/3-C								See Attached
LCS 320 333418/2-C								
LCS 320 333081/4-C								
LCS 320 333418/4-C								
LCS 320 333081/2-C								
LCS 320 333418/3C								
LCS 320 336962/3-C								
LCS 320 336962/4-C								
LCS 320 336962/2-C								

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☑ Yes ☐ No | Custody Seal No.: 1646043 | Cooler Temp. (°C): Obs'd: 4.5c Corr'd: 4.3°c | Therm ID No.: AK-5

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	FETA KWX	11-13-19 16:00		ETAW Sol	14 Nov 19 0910
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.23, dated 4/16/2019

1/20/2020

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
~~E-1305,1306 R1 M0010 FH (140-17067-1)~~	10/13/19	Alaskan		Air			X			2	MeOH Fraction
E-1307,1308 R1 M0010 BH (140-17067-2)	10/13/19	Alaskan		Air				X		2	MeOH Fraction
E-1309 R1 M0010 IMP 1,2&3 COND (140-17067-3)	10/13/19	Alaskan		Air					X	2	MeOH Fraction
E-1310 R1 M0010 IMP GLASSWARE MEOH RINSE (140-17067-4)	10/13/19	Alaskan		Air				X		2	MeOH Fraction
E-1311 R1 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-5)	10/13/19	Alaskan		Air				X		1	MeOH Fraction
E-~~1319,1320 R3 M0010 FH (140-17067-~~11)	10/15/19	Alaskan		Air			X			2	MeOH Fraction
E-1321,1322 R3 M0010 BH (140-17067-12)	10/15/19	Alaskan		Air				X		2	MeOH Fraction
~~E-1323 R3 M0010 IMP 1,2&3 COND (140-17067-13)~~	10/15/19	Alaskan		Air					X	3	MeOH Fraction
E-1324 R3 M0010 IMP GLASSWARE MEOH RINSE (140-17067-14)	10/15/19	Alaskan		Air				X		4	MeOH Fraction

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	11/15/19 1500	ETA	[signature]	11/16/19 930	EDSX
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.6°C

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeOH)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1325 R3 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-15)	10/15/19	Alaskan		Air				X		1	MeOH Fraction
~~A-6612,6613 R5 M0010 FH (140-17067-21)~~	10/16/19	Alaskan		Air			X			2	MeOH Fraction
A-6614,6615 R5 M0010 BH (140-17067-22)	10/16/19	Alaskan		Air				X		2	MeOH Fraction
~~A-6616 R5 M0010 IMP 1,2&3 COND (140-17067-23)~~	10/16/19	Alaskan		Air					X	3	MeOH Fraction
A-6617 R5 M0010 IMP GLASSWARE MEOH RINSE (140-17067-24)	10/16/19	Alaskan		Air				X		1	MeOH Fraction
A-6618 R5 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-25)	10/16/19	Alaskan		Air				X		1	MeOH Fraction

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11/15/19 1500	ETA		11/16/19 930	EurAcc
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: Ok

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
~~E-1312,1313 R2 M0010 FH (140-17067-6)~~	10/14/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
~~E-1314,1315 R2 M0010 BH (140-17067-7)~~	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1316 R2 M0010 IMP 1,2&3 COND (140-17067-8)	10/14/19	Alaskan		Air					X	3	MeOH Fraction, MeCl2 Extractions
E-1317 R2 M0010 IMP GLASSWARE MEOH RINSE (140-17067-9)	10/14/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
E-1318 R2 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-10)	10/14/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
~~E-1326,1327 R4 M0010 FH (140-17067-16)~~	10/15/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
~~E-1328,1329 R4 M0010 BH (140-17067-17)~~	10/15/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
~~E-1330 R4 M0010 IMP 1,2&3 COND (140-17067-18)~~	10/15/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
E-1331 R4 M0010 IMP GLASSWARE MEOH RINSE (140-17067-19)	10/15/19	Alaskan		Air				X		3	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	11/15/19 1500	ETA	[signature]	11/16/19 9:50	ETA
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		[illegible]

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-6572.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-17067-2
Address: 880 Riverside Parkway,	Due Date Requested: 10/31/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: M0010 Field Samples (MeCl2)	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Air_AT_FH PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_BH (MOD) PFAS, Standard List (28 Analytes)	PFC_IDA/Air_AT_Condens (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
E-1332 R4 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-20)	10/15/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6619,6620 R6 M0010 FH (140-17067-26)	10/17/19	Alaskan		Air			X			2	MeOH Fraction, MeCl2 Extractions
A-6621,6622 R6 M0010 BH (140-17067-27)	10/17/19	Alaskan		Air				X		2	MeOH Fraction, MeCl2 Extractions
A-6623 R6 M0010 IMP 1,2&3 COND (140-17067-28)	10/17/19	Alaskan		Air					X	2	MeOH Fraction, MeCl2 Extractions
A-6624 R6 M0010 IMP GLASSWARE MEOH RINSE (140-17067-29)	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions
A-6625 R6 M0010 BREAKTHROUGH XAD-2 RESIN TUBE (140-17067-30)	10/17/19	Alaskan		Air				X		1	MeOH Fraction, MeCl2 Extractions

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11/15/19 1500	ETA		11/16/19 930	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.6°C

Ver: 01/16/2019

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Sacramento
Sample Receiving Notes

140-17067 Field Sheet

Job: _____

Tracking # : 4395-7837-9839

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

GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

Therm. ID: AK12 Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1046071

Cooler ID: —

Temp Observed: 0.8 °C Corrected: 0.8 °C

From: Temp Blank ☑ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: JG Date: 11/9/19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Non-conformance	**Yes**	**No**	**NA**
NCM Filed?	☐	☐	☑

Initials: JG Date: 11/9/19

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

W12-C

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Sacramento
Sample Receiving Notes

140-17067 Field Sheet

Tracking # : 4395-7837-9953

Job: _____

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

GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

Therm. ID: Ak-11 Corr. Factor: (+/-) 0.4 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1046020

Cooler ID: —

Temp Observed: 0.4 °C Corrected: 0.8 °C

From: Temp Blank ☑ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: JG Date: 11/12/19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

Non-conformance	Yes	No	NA
NCM Filed?	☐	☐	☑

Initials: JG Date: 11/12/19

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

W14-D

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Sacramento
Sample Receiving Notes

140-17067 Field Sheet

Job: _____

Tracking # : 4395 7838 0177

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: Batch Samples, requested time is not an issue.

14 Nov 19

14B

Therm. ID: AK-5 Corr. Factor: (+) (-) 0.2 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1046043

Cooler ID: _____

Temp Observed: 4.5 °C Corrected: 4.3 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☐	☑	☐

14Nov19

Initials: _____ Date: 14 Nov 19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Non-conformance	**Yes**	**No**	**NA**
NCM Filed?	☐	☐	☑

Initials: JG Date: 11/14/19

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

W14-B

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Sacramento
Sample Receiving Notes

140-17067 Field Sheet

Tracking # : 4395 7838 0615

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

GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

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

Notes: _____

Therm. ID: IR15m Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1046130, 1046139

Cooler ID: ✓

Temp Observed: 0.2 °C Corrected: 0.2 °C

From: Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐

Initials: SS Date: 11/16/19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	☐	☒	☐
Sample containers have legible labels?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Samples w/o discrepancies?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐
Non-conformance	**Yes**	**No**	**NA**
NCM Filed?	☐	☐	☒

Initials: PK Date: 11/18/19

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

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Sacramento
Sample Receiving Notes

140-17067 Field Sheet

Job: _____

Tracking # : 4395 7838 1688

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Cour
GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

Therm. ID: AK 12 Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 1046204

Cooler ID: —

Temp Observed: 0.2 °C Corrected: 0.2 °C

From: Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐

Initials: PK Date: 11/27/19

Unpacking/Labeling The Samples	Yes	No	NA
Samples compromised/tampered with?	☐	☒	☐
Sample containers have legible labels?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Samples w/o discrepancies?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐
Non-conformance	**Yes**	**No**	**NA**
NCM Filed?	☐	☐	☒

Initials: PK Date: 11/27/19

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

WRC

\\TACORP\CORP\QA\QA_FACILITIES\QA\...

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-17067-1

Login Number: 17067
List Number: 3
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1046130/1046139
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17068-1
Client Project/Site: M0010 QC Samples (MeOH)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/21/2020 11:10:41 AM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified 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.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17068-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17068-1

Sample Receipt

The samples were received on October 19, 2019 at 9:30 AM. The temperatures of the 5 coolers at receipt time were 4.2º C, 5.2º C, 5.3º C, 5.5º C and 17.4º C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB (140-17068-13), A-6617 QC M0010 DI WATER RB (140-17068-14) and A-6618 QC M0010 MEOH WITH 5% NH4OH RB (140-17068-15).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Method 0010/Method 3542 Sampling Train Preparation

Train fractions were extracted and prepared for analysis in TestAmerica's Knoxville laboratory. Extracts and condensate samples were forwarded to the Sacramento laboratory for PFAS analysis. All results are reported in "Total ng" per sample.

LCMS

Method 537 (modified): The method blank for preparation batch 320-336962, 320-337396 and 320-338209 and analytical batch 320-340564 contained Perfluorooctanoic acid (PFOA) above the reporting limit (RL). There was insufficient sample to perform a re-extraction or re-analysis; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

A-6601,6602 QC M0010 FH BT #1 (140-17068-1) and (MB 320-336962/1-C)

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343137 recovered outside control limits for the following analytes: DONA. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The method blank for preparation batch 320-337397, 320-338295 and 320-338717 and analytical batch 320-343812 contained Perfluorobutanoic acid (PFBA) above the method reporting limit. Sample re-extraction and/or re-analysis of samples was not performed due to insufficient sample. The data have been reported.

Method 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

(ICV 320-343569/9)

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgement was used to positively identify the analyte.

COND RL X2 (140-17068-26)

Job ID: 140-17068-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-4:2 FTS and M2-6:2 FTS are above the method recommended limit for the following samples: A-6603,6604 QC M0010 BH BT #1 (140-17068-2), A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1 (140-17068-5) and A-6615 QC M0010 XAD-2 RESIN TUBE TB (140-17068-11). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Surrogate recovery for 13C8 PFOA in the following continuing calibration verification was outside control limits: (CCV 320-349852/15). The surrogate recovery was biased high and all the associated samples were ND for this surrogate due to the possibility of not being spiked into the samples.

Method 537 (modified): Surrogate recoveries for the following samples was zero: A-6605 QC M0010 IMP 1,2&3 COND BT #1 (140-17068-3). It appears the samples were not spiked with surrogate compounds.

Method 537 (modified): Reanalysis of the following samples was performed outside of the analytical holding time to report the surrogate recoveries: A-6605 QC M0010 IMP 1,2&3 COND BT #1 (140-17068-3).

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

Comments

Reporting Limits (RLs) and Method Detection Limits (MDLs) for PFAS analytes used for this specialty application were derived from the Sacramento Laboratory's reference data for reporting soil and water matrices. Method 0010 sampling train matrix specific RLs and MDLs have not been established for PFAS analytes. The soil and water limits are expected to be reasonable approximations of the actual matrix specific limits, under these conditions.

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6601,6602 QC M0010 FH BT #1
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Lab Sample ID: 140-17068-1
Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanoic acid (PFOA)	**1.06**	**I H B**	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C5 PFPeA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFHpA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C5 PFNA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFUnA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFDoA	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
18O2 PFHxS	*103*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*
d5-NEtFOSAA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:40*	*1*

Client Sample ID: A-6601,6602 QC M0010 FH BT #1

Lab Sample ID: 140-17068-1
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	91		25 - 150	11/08/19 14:30	11/21/19 21:40	1
M2-8:2 FTS	82		25 - 150	11/08/19 14:30	11/21/19 21:40	1
M2-4:2 FTS	92		25 - 150	11/08/19 14:30	11/21/19 21:40	1
13C3 HFPO-DA	74		25 - 150	11/08/19 14:30	11/21/19 21:40	1

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2
Matrix: Air
Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10.5**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoropentanoic acid (PFPeA)	**1.80**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorohexanoic acid (PFHxA)	**55.1**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroheptanoic acid (PFHpA)	**84.1**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanoic acid (PFOA)	**32.7**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorodecanoic acid (PFDA)	**28.5**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorobutanesulfonic acid (PFBS)	**7.47**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.87**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
HFPO-DA (GenX)	**5.19**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	56		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C5 PFPeA	68		25 - 150	11/10/19 11:40	12/20/19 18:47	1

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	93		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFHpA	81		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFOA	99		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C5 PFNA	93		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFDA	83		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFUnA	94		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFDoA	105		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C2 PFTeDA	107		25 - 150	11/10/19 11:40	12/20/19 18:47	1
18O2 PFHxS	86		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C4 PFOS	94		25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C8 FOSA	89		25 - 150	11/10/19 11:40	12/20/19 18:47	1
d3-NMeFOSAA	100		25 - 150	11/10/19 11:40	12/20/19 18:47	1
d5-NEtFOSAA	108		25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-6:2 FTS	186	*	25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-8:2 FTS	105		25 - 150	11/10/19 11:40	12/20/19 18:47	1
M2-4:2 FTS	174	*	25 - 150	11/10/19 11:40	12/20/19 18:47	1
13C3 HFPO-DA	79		25 - 150	11/10/19 11:40	12/20/19 18:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	122			11/10/19 11:40	12/20/19 18:47	1
13C8 PFOS	88			11/10/19 11:40	12/20/19 18:47	1

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.00**		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoropentanoic acid (PFPeA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorohexanoic acid (PFHxA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroheptanoic acid (PFHpA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanoic acid (PFOA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorononanoic acid (PFNA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorodecanoic acid (PFDA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroundecanoic acid (PFUnA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorododecanoic acid (PFDoA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorotridecanoic acid (PFTriA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorononanesulfonic acid (PFNS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
Perfluorooctanesulfonamide (FOSA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
4:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
6:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
8:2 FTS	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
HFPO-DA (GenX)	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
F-53B Major	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1
F-53B Minor	ND		0.994	0.974	ng/Sample		11/07/19 13:00	11/17/19 01:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C5 PFPeA	*93*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFHxA	*97*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFHpA	*99*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C5 PFNA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFDA	*102*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFUnA	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFDoA	*98*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
18O2 PFHxS	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C4 PFOS	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C8 FOSA	*99*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
d5-NEtFOSAA	*82*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-6:2 FTS	*86*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-8:2 FTS	*87*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
M2-4:2 FTS	*80*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*
13C3 HFPO-DA	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 01:40*	*1*

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*0.05*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 16:38*	*1*
13C8 PFOS	*0*	*X*	*50 - 150*	*11/07/19 13:00*	*01/09/20 16:38*	*1*

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 20:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C5 PFPeA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFHxA	*96*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFHpA	*96*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFOA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C5 PFNA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFDA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFDoA	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
18O2 PFHxS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C4 PFOS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
13C8 FOSA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
d5-NEtFOSAA	*110*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
M2-6:2 FTS	*104*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:56*	*1*

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	97		25 - 150	11/10/19 11:40	12/05/19 20:56	1
13C3 HFPO-DA	100		25 - 150	11/10/19 11:40	12/05/19 20:56	1

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.30**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoropentanoic acid (PFPeA)	**2.00**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorohexanoic acid (PFHxA)	**52.6**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroheptanoic acid (PFHpA)	**80.8**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanoic acid (PFOA)	**29.3**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorodecanoic acid (PFDA)	**26.2**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorobutanesulfonic acid (PFBS)	**6.91**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanesulfonic acid (PFOS)	**1.63**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
HFPO-DA (GenX)	**5.53**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	54		25 - 150	11/10/19 11:40	12/20/19 18:57	1
13C5 PFPeA	67		25 - 150	11/10/19 11:40	12/20/19 18:57	1

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFHpA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFDA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFUnA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
18O2 PFHxS	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C4 PFOS	*92*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C8 FOSA	*82*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-6:2 FTS	*172*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-8:2 FTS	*96*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
M2-4:2 FTS	*173*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C3 HFPO-DA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*117*			*11/10/19 11:40*	*12/20/19 18:57*	*1*
13C8 PFOS	*86*			*11/10/19 11:40*	*12/20/19 18:57*	*1*

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-11

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.02**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoropentanoic acid (PFPeA)	**1.86**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorohexanoic acid (PFHxA)	**50.2**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroheptanoic acid (PFHpA)	**74.4**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanoic acid (PFOA)	**32.2**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorodecanoic acid (PFDA)	**24.5**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorobutanesulfonic acid (PFBS)	**5.74**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanesulfonic acid (PFOS)	**1.88**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-11

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
HFPO-DA (GenX)	**4.07**	**H**	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 19:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C5 PFPeA	*66*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFHxA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFHpA	*81*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFOA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C5 PFNA	*83*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFDA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFUnA	*80*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFDoA	*75*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C2 PFTeDA	*66*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
18O2 PFHxS	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C4 PFOS	*85*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C8 FOSA	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-6:2 FTS	*153*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-8:2 FTS	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
M2-4:2 FTS	*172*	*	*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C3 HFPO-DA	*78*		*25 - 150*	*11/10/19 11:40*	*12/20/19 19:07*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA	*115*			*11/10/19 11:40*	*12/20/19 19:07*	*1*
13C8 PFOS	*82*			*11/10/19 11:40*	*12/20/19 19:07*	*1*

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.15**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 21:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFHxA	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFOA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C5 PFNA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFUnA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFDoA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*11/10/19 11:40*	*12/05/19 21:36*	*1*

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	94		25 - 150	11/10/19 11:40	12/05/19 21:36	1
M2-8:2 FTS	92		25 - 150	11/10/19 11:40	12/05/19 21:36	1
M2-4:2 FTS	103		25 - 150	11/10/19 11:40	12/05/19 21:36	1
13C3 HFPO-DA	96		25 - 150	11/10/19 11:40	12/05/19 21:36	1

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.52**		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/07/19 13:00	11/17/19 02:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	109		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C5 PFPeA	106		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFHxA	103		25 - 150	11/07/19 13:00	11/17/19 02:00	1

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C4 PFOA	108		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C5 PFNA	114		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFDA	112		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFUnA	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C2 PFTeDA	115		25 - 150	11/07/19 13:00	11/17/19 02:00	1
18O2 PFHxS	117		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C4 PFOS	111		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C8 FOSA	108		25 - 150	11/07/19 13:00	11/17/19 02:00	1
d3-NMeFOSAA	88		25 - 150	11/07/19 13:00	11/17/19 02:00	1
d5-NEtFOSAA	87		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-6:2 FTS	104		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-8:2 FTS	104		25 - 150	11/07/19 13:00	11/17/19 02:00	1
M2-4:2 FTS	92		25 - 150	11/07/19 13:00	11/17/19 02:00	1
13C3 HFPO-DA	102		25 - 150	11/07/19 13:00	11/17/19 02:00	1

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.10**	**H B**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Air Train

Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
HFPO-DA (GenX)	**1.03**	**J H**	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/10/19 11:40	12/05/19 22:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C5 PFPeA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFOA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C5 PFNA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFUnA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
18O2 PFHxS	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C4 PFOS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-8:2 FTS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*
13C3 HFPO-DA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:16*	*1*

Client Sample ID: A-6905 MEDIA CHECK XAD

Lab Sample ID: 140-17068-19

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.56**	**H B**	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoropentanoic acid (PFPeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanoic acid (PFOA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorononanoic acid (PFNA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorodecanoic acid (PFDA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1

Client Sample ID: A-6905 MEDIA CHECK XAD

Lab Sample ID: 140-17068-19
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
4:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
6:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
8:2 FTS	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H *	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
HFPO-DA (GenX)	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
F-53B Major	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1
F-53B Minor	ND	H	1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 22:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C5 PFPeA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFHxA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFHpA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFOA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C5 PFNA	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFUnA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFDoA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
18O2 PFHxS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C4 PFOS	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C8 FOSA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-6:2 FTS	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-8:2 FTS	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
M2-4:2 FTS	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:46*	*1*

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorohexanoic acid (PFHxA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroheptanoic acid (PFHpA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanoic acid (PFOA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorononanoic acid (PFNA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorodecanoic acid (PFDA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroundecanoic acid (PFUnA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorododecanoic acid (PFDoA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorotridecanoic acid (PFTriA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorononanesulfonic acid (PFNS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
Perfluorooctanesulfonamide (FOSA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
4:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
6:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
8:2 FTS	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
HFPO-DA (GenX)	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
F-53B Major	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1
F-53B Minor	ND	H	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 21:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFHpA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFOA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFDA	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFDoA	*94*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C4 PFOS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
13C8 FOSA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*
M2-6:2 FTS	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 21:50*	*1*

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20
Matrix: Air
Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30
Sample Container: Air Train

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	77		25 - 150	11/08/19 14:30	11/21/19 21:50	1
M2-4:2 FTS	87		25 - 150	11/08/19 14:30	11/21/19 21:50	1
13C3 HFPO-DA	86		25 - 150	11/08/19 14:30	11/21/19 21:50	1

Client Sample ID: FH RL

Lab Sample ID: 140-17068-21
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.760**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoropentanoic acid (PFPeA)	**0.571**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorohexanoic acid (PFHxA)	**0.672**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroheptanoic acid (PFHpA)	**0.624**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanoic acid (PFOA)	**1.01**	**H B**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorononanoic acid (PFNA)	**0.574**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorodecanoic acid (PFDA)	**0.594**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroundecanoic acid (PFUnA)	**0.670**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorododecanoic acid (PFDoA)	**0.512**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorotridecanoic acid (PFTriA)	**0.554**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorotetradecanoic acid (PFTeA)	**0.639**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	**0.528**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.496**	**J H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanesulfonic acid (PFOS)	**0.506**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorononanesulfonic acid (PFNS)	**0.495**	**J H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
Perfluorooctanesulfonamide (FOSA)	**0.549**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**0.516**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**0.580**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
4:2 FTS	**0.507**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
6:2 FTS	**0.563**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
8:2 FTS	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	**0.503**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
HFPO-DA (GenX)	**1.68**	**H**	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
F-53B Major	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1
F-53B Minor	ND	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:00	1

Client Sample ID: FH RL

Lab Sample ID: 140-17068-21

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	88		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C5 PFPeA	89		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C2 PFHxA	95		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C4 PFHpA	94		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C4 PFOA	96		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C5 PFNA	96		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C2 PFDA	92		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C2 PFUnA	95		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C2 PFDoA	101		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C2 PFTeDA	89		25 - 150	11/08/19 14:30	11/21/19 22:00	1
18O2 PFHxS	102		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C4 PFOS	92		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C8 FOSA	80		25 - 150	11/08/19 14:30	11/21/19 22:00	1
d3-NMeFOSAA	86		25 - 150	11/08/19 14:30	11/21/19 22:00	1
d5-NEtFOSAA	97		25 - 150	11/08/19 14:30	11/21/19 22:00	1
M2-6:2 FTS	93		25 - 150	11/08/19 14:30	11/21/19 22:00	1
M2-8:2 FTS	93		25 - 150	11/08/19 14:30	11/21/19 22:00	1
M2-4:2 FTS	86		25 - 150	11/08/19 14:30	11/21/19 22:00	1
13C3 HFPO-DA	82		25 - 150	11/08/19 14:30	11/21/19 22:00	1

Client Sample ID: FH RL X2

Lab Sample ID: 140-17068-22

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.26	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoropentanoic acid (PFPeA)	1.11	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorohexanoic acid (PFHxA)	1.18	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoroheptanoic acid (PFHpA)	1.07	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanoic acid (PFOA)	1.45	H B	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorononanoic acid (PFNA)	1.14	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorodecanoic acid (PFDA)	1.15	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoroundecanoic acid (PFUnA)	1.18	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorododecanoic acid (PFDoA)	1.16	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorotridecanoic acid (PFTriA)	1.14	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorotetradecanoic acid (PFTeA)	1.13	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorobutanesulfonic acid (PFBS)	0.913	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoropentanesulfonic acid (PFPeS)	0.930	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.976	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.05	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanesulfonic acid (PFOS)	1.03	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1

Client Sample ID: FH RL X2

Lab Sample ID: 140-17068-22

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanesulfonic acid (PFNS)	1.01	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorodecanesulfonic acid (PFDS)	1.06	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
Perfluorooctanesulfonamide (FOSA)	1.18	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.26	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.34	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
4:2 FTS	1.00	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
6:2 FTS	1.05	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
8:2 FTS	1.10	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.09	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
HFPO-DA (GenX)	1.63	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
F-53B Major	1.08	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1
F-53B Minor	0.973	H	0.500	0.490	ng/Sample		11/08/19 14:30	11/21/19 22:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C5 PFPeA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFHpA	*93*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFOA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFDA	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFUnA	*92*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFDoA	*95*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
18O2 PFHxS	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C4 PFOS	*90*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C8 FOSA	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-6:2 FTS	*89*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
M2-4:2 FTS	*83*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*
13C3 HFPO-DA	*76*		*25 - 150*	*11/08/19 14:30*	*11/21/19 22:29*	*1*

Client Sample ID: BH RL

Lab Sample ID: 140-17068-23

Date Collected: 10/21/19 00:00
Matrix: Air
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.14	H B	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoropentanoic acid (PFPeA)	0.669	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorohexanoic acid (PFHxA)	0.802	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroheptanoic acid (PFHpA)	0.837	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: BH RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-23
Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.642**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorononanoic acid (PFNA)	**0.589**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorodecanoic acid (PFDA)	**0.594**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroundecanoic acid (PFUnA)	**0.680**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorododecanoic acid (PFDoA)	**0.515**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorotridecanoic acid (PFTriA)	**0.508**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorotetradecanoic acid (PFTeA)	**0.568**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorobutanesulfonic acid (PFBS)	**0.579**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoropentanesulfonic acid (PFPeS)	**0.689**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorohexanesulfonic acid (PFHxS)	**0.586**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.534**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorooctanesulfonic acid (PFOS)	**0.596**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorononanesulfonic acid (PFNS)	**0.527**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
Perfluorooctanesulfonamide (FOSA)	**0.586**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**0.530**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
4:2 FTS	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
6:2 FTS	**0.532**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
8:2 FTS	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	**0.572**	**H ***	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
HFPO-DA (GenX)	**1.18**	**H**	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
F-53B Major	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1
F-53B Minor	ND	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 22:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C5 PFPeA	*79*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFHxA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C4 PFHpA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C4 PFOA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C5 PFNA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFDA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFUnA	*81*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFDoA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
18O2 PFHxS	*79*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C4 PFOS	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*
13C8 FOSA	*73*		*25 - 150*	*11/10/19 11:40*	*12/05/19 22:56*	*1*

Client Sample ID: BH RL

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-23

Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	85		25 - 150	11/10/19 11:40	12/05/19 22:56	1
d5-NEtFOSAA	96		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-6:2 FTS	95		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-8:2 FTS	96		25 - 150	11/10/19 11:40	12/05/19 22:56	1
M2-4:2 FTS	91		25 - 150	11/10/19 11:40	12/05/19 22:56	1
13C3 HFPO-DA	71		25 - 150	11/10/19 11:40	12/05/19 22:56	1

Client Sample ID: BH RL X2

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-24

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.74	H B	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoropentanoic acid (PFPeA)	1.16	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorohexanoic acid (PFHxA)	1.27	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroheptanoic acid (PFHpA)	1.21	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanoic acid (PFOA)	1.08	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorononanoic acid (PFNA)	1.00	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorodecanoic acid (PFDA)	1.07	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroundecanoic acid (PFUnA)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorododecanoic acid (PFDoA)	0.974	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorotridecanoic acid (PFTriA)	0.908	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorotetradecanoic acid (PFTeA)	0.881	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorobutanesulfonic acid (PFBS)	1.00	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoropentanesulfonic acid (PFPeS)	1.09	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorohexanesulfonic acid (PFHxS)	1.08	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanesulfonic acid (PFOS)	0.927	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorononanesulfonic acid (PFNS)	0.913	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorodecanesulfonic acid (PFDS)	0.819	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
Perfluorooctanesulfonamide (FOSA)	1.06	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.910	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.876	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
4:2 FTS	0.821	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
6:2 FTS	0.948	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
8:2 FTS	0.947	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1

Client Sample ID: BH RL X2

Lab Sample ID: 140-17068-24
Matrix: Air

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.20	H *	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
HFPO-DA (GenX)	1.43	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
F-53B Major	0.832	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1
F-53B Minor	0.810	H	0.500	0.490	ng/Sample		11/10/19 11:40	12/05/19 23:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C5 PFPeA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFHxA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFHpA	*78*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFOA	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C5 PFNA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFDA	*83*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFUnA	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFDoA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
18O2 PFHxS	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C4 PFOS	*71*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C8 FOSA	*70*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
M2-4:2 FTS	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*
13C3 HFPO-DA	*71*		*25 - 150*	*11/10/19 11:40*	*12/05/19 23:06*	*1*

Client Sample ID: COND RL

Lab Sample ID: 140-17068-25
Matrix: Air

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.670		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoropentanoic acid (PFPeA)	0.538		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorohexanoic acid (PFHxA)	0.623		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroheptanoic acid (PFHpA)	0.549		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanoic acid (PFOA)	0.654		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorononanoic acid (PFNA)	0.546		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorodecanoic acid (PFDA)	0.566		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroundecanoic acid (PFUnA)	0.633		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorododecanoic acid (PFDoA)	0.554		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorotridecanoic acid (PFTriA)	0.520		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorotetradecanoic acid (PFTeA)	0.556		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: COND RL
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-25
Matrix: Air

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.546**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanesulfonic acid (PFOS)	**0.492**	**J**	0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorononanesulfonic acid (PFNS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
Perfluorooctanesulfonamide (FOSA)	**0.619**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**0.548**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
4:2 FTS	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
6:2 FTS	**0.648**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
8:2 FTS	**0.589**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
HFPO-DA (GenX)	**1.02**		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
F-53B Major	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1
F-53B Minor	ND		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFHpA	*109*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFOA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C5 PFNA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFDA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFUnA	*107*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFDoA	*101*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C4 PFOS	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C8 FOSA	*91*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-6:2 FTS	*100*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*
13C3 HFPO-DA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:19*	*1*

Client Sample ID: COND RL X2

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-26

Matrix: Air

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.03		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoropentanoic acid (PFPeA)	0.994		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorohexanoic acid (PFHxA)	1.00		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroheptanoic acid (PFHpA)	0.982		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanoic acid (PFOA)	1.25		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorononanoic acid (PFNA)	1.10		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorodecanoic acid (PFDA)	1.13	I	0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroundecanoic acid (PFUnA)	1.12		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorododecanoic acid (PFDoA)	0.967		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorotridecanoic acid (PFTriA)	0.968		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorotetradecanoic acid (PFTeA)	1.14		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorobutanesulfonic acid (PFBS)	0.615		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoropentanesulfonic acid (PFPeS)	0.833		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.901		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.936		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanesulfonic acid (PFOS)	0.948		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorononanesulfonic acid (PFNS)	0.930		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorodecanesulfonic acid (PFDS)	0.935		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
Perfluorooctanesulfonamide (FOSA)	1.05		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.939		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.942		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
4:2 FTS	0.904		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
6:2 FTS	1.24		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
8:2 FTS	1.13		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.930		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
HFPO-DA (GenX)	1.41		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
F-53B Major	0.842		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1
F-53B Minor	0.961		0.500	0.490	ng/Sample		11/07/19 13:00	11/17/19 02:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C5 PFPeA	*103*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C4 PFHpA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C4 PFOA	*106*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C5 PFNA	*108*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFDA	*111*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/17/19 02:29*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: COND RL X2
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00
Sample Container: Air Train

Lab Sample ID: 140-17068-26
Matrix: Air

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	109		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C2 PFTeDA	108		25 - 150	11/07/19 13:00	11/17/19 02:29	1
18O2 PFHxS	112		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C4 PFOS	107		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C8 FOSA	98		25 - 150	11/07/19 13:00	11/17/19 02:29	1
d3-NMeFOSAA	87		25 - 150	11/07/19 13:00	11/17/19 02:29	1
d5-NEtFOSAA	84		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-6:2 FTS	91		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-8:2 FTS	98		25 - 150	11/07/19 13:00	11/17/19 02:29	1
M2-4:2 FTS	84		25 - 150	11/07/19 13:00	11/17/19 02:29	1
13C3 HFPO-DA	108		25 - 150	11/07/19 13:00	11/17/19 02:29	1

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: None

Analyte	RL	MDL	Units
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.500	0.490	ng/Sample
4:2 FTS	0.500	0.490	ng/Sample
6:2 FTS	0.500	0.490	ng/Sample
8:2 FTS	0.500	0.490	ng/Sample
F-53B Major	0.500	0.490	ng/Sample
F-53B Minor	0.500	0.490	ng/Sample
HFPO-DA (GenX)	0.500	0.490	ng/Sample
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.500	0.490	ng/Sample
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.500	0.490	ng/Sample
Perfluorobutanesulfonic acid (PFBS)	0.500	0.490	ng/Sample
Perfluorobutanoic acid (PFBA)	0.500	0.490	ng/Sample
Perfluorodecanesulfonic acid (PFDS)	0.500	0.490	ng/Sample
Perfluorodecanoic acid (PFDA)	0.500	0.490	ng/Sample
Perfluorododecanoic acid (PFDoA)	0.500	0.490	ng/Sample
Perfluoroheptanesulfonic Acid (PFHpS)	0.500	0.490	ng/Sample
Perfluoroheptanoic acid (PFHpA)	0.500	0.490	ng/Sample
Perfluorohexanesulfonic acid (PFHxS)	0.500	0.490	ng/Sample
Perfluorohexanoic acid (PFHxA)	0.500	0.490	ng/Sample
Perfluorononanesulfonic acid (PFNS)	0.500	0.490	ng/Sample
Perfluorononanoic acid (PFNA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonamide (FOSA)	0.500	0.490	ng/Sample
Perfluorooctanesulfonic acid (PFOS)	0.500	0.490	ng/Sample
Perfluorooctanoic acid (PFOA)	0.500	0.490	ng/Sample
Perfluoropentanesulfonic acid (PFPeS)	0.500	0.490	ng/Sample
Perfluoropentanoic acid (PFPeA)	0.500	0.490	ng/Sample
Perfluorotetradecanoic acid (PFTeA)	0.500	0.490	ng/Sample
Perfluorotridecanoic acid (PFTriA)	0.500	0.490	ng/Sample
Perfluoroundecanoic acid (PFUnA)	0.500	0.490	ng/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Surrogate Recovery (Acceptance Limits)	
		13C8PFOA	PFOS
Lab Sample ID	Client Sample ID		
140-17068-2	A-6603,6604 QC M0010 BH BT	122	88
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	117	86
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	115	82
MB 320-337397/1-C	Method Blank		

Surrogate Legend

13C8PFOA = 13C8 PFOA
PFOS = 13C8 PFOS

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Surrogate Recovery (Acceptance Limits)	
		13C8PFOA	PFOS
Lab Sample ID	Client Sample ID	(50-150)	(50-150)
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 C	0.05 X	0 X

Surrogate Legend

13C8PFOA = 13C8 PFOA
PFOS = 13C8 PFOS

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-17068-1	A-6601,6602 QC M0010 FH BT	89	86	92	95	92	92	92	91
140-17068-2	A-6603,6604 QC M0010 BH BT #1	56	68	93	81	99	93	83	94
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	94	93	97	99	94	100	102	100
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	95	93	96	96	98	94	93	89
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	54	67	91	84	94	87	84	90
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	57	66	90	81	90	83	75	80
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	93	89	93	91	94	90	90	86
140-17068-14	A-6617 QC M0010 DI WATER RB	109	106	103	111	108	114	112	111
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	91	92	92	92	90	85	86	87
140-17068-19	A-6905 MEDIA CHECK XAD	85	83	87	82	89	86	89	84
140-17068-20	A-6906 MEDIA CHECK FILTER	86	85	91	93	89	87	86	89
140-17068-21	FH RL	88	89	95	94	96	96	92	95
140-17068-22	FH RL X2	87	85	92	93	91	91	89	92
140-17068-23	BH RL	80	79	84	76	84	81	81	81
140-17068-24	BH RL X2	85	82	88	78	88	84	83	77
140-17068-25	COND RL	105	103	105	109	105	108	107	107
140-17068-26	COND RL X2	105	103	105	111	106	108	111	113
LCS 320-336668/2-B	Lab Control Sample	109	108	107	112	109	112	114	112
LCS 320-336668/3-B	Lab Control Sample	113	111	112	113	111	110	113	113
LCS 320-336668/4-B	Lab Control Sample	109	105	108	113	109	112	108	108
LCS 320-336962/2-C	Lab Control Sample	97	96	99	106	103	101	100	105
LCS 320-336962/3-C	Lab Control Sample	95	95	98	105	100	96	99	101
LCS 320-336962/4-C	Lab Control Sample	96	94	100	103	100	98	98	101
LCS 320-337397/2-C	Lab Control Sample	96	92	99	95	96	87	85	90
LCS 320-337397/2-C	Lab Control Sample	90	89	98	90	88	91	80	88
LCS 320-337397/3-C	Lab Control Sample	98	98	103	96	100	89	86	88
LCS 320-337397/3-C	Lab Control Sample	96	95	101	94	98	98	82	92
LCS 320-337397/4-C	Lab Control Sample	92	91	102	94	97	90	88	89
LCS 320-337397/4-C	Lab Control Sample	83	85	95	83	93	88	77	86
MB 320-336668/1-B	Method Blank	113	113	122	123	112	112	110	113
MB 320-336962/1-C	Method Blank	98	94	104	105	102	98	97	101
MB 320-337397/1-C	Method Blank	94	89	94	92	92	91	92	91
MB 320-337397/1-C	Method Blank	98	97	100	91	97	91	80	89

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
140-17068-1	A-6601,6602 QC M0010 FH BT	90	82	103	89	80	82	93	91
140-17068-2	A-6603,6604 QC M0010 BH BT #1	105	107	86	94	89	100	108	186 *
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	98	94	105	96	99	85	82	86

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)	M262FTS (25-150)
140-17068-4	A-6606 QC M0010 IMP GLASSV	95	104	95	93	89	98	110	104
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	102	105	86	92	82	91	98	172 *
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	75	66	90	85	84	69	86	153 *
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	92	90	88	84	80	89	103	94
140-17068-14	A-6617 QC M0010 DI WATER RB	109	115	117	111	108	88	87	104
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	89	88	87	82	80	90	102	93
140-17068-19	A-6905 MEDIA CHECK XAD	91	88	82	82	80	87	99	87
140-17068-20	A-6906 MEDIA CHECK FILTER	94	87	101	83	85	82	92	87
140-17068-21	FH RL	101	89	102	92	80	86	97	93
140-17068-22	FH RL X2	95	85	98	90	83	84	98	89
140-17068-23	BH RL	85	76	79	76	73	85	96	95
140-17068-24	BH RL X2	82	76	77	71	70	77	87	92
140-17068-25	COND RL	101	96	116	106	91	92	86	100
140-17068-26	COND RL X2	109	108	112	107	98	87	84	91
LCS 320-336668/2-B	Lab Control Sample	116	119	122	111	104	93	88	95
LCS 320-336668/3-B	Lab Control Sample	110	98	119	110	100	87	84	96
LCS 320-336668/4-B	Lab Control Sample	99	98	114	106	101	85	82	99
LCS 320-336962/2-C	Lab Control Sample	108	102	112	94	93	92	102	96
LCS 320-336962/3-C	Lab Control Sample	104	97	109	92	92	88	103	93
LCS 320-336962/4-C	Lab Control Sample	103	100	105	96	95	93	101	89
LCS 320-337397/2-C	Lab Control Sample	100	91	99	85	81	83	95	113
LCS 320-337397/2-C	Lab Control Sample	93	93	83	86	81	90	97	130
LCS 320-337397/3-C	Lab Control Sample	99	88	94	84	81	86	98	110
LCS 320-337397/3-C	Lab Control Sample	94	99	89	87	85	99	111	133
LCS 320-337397/4-C	Lab Control Sample	95	93	85	75	81	86	98	108
LCS 320-337397/4-C	Lab Control Sample	92	96	76	76	77	91	102	122
MB 320-336668/1-B	Method Blank	104	93	124	108	105	95	96	96
MB 320-336962/1-C	Method Blank	102	98	109	97	96	93	104	96
MB 320-337397/1-C	Method Blank	89	84	88	84	82	90	98	102
MB 320-337397/1-C	Method Blank	89	90	88	84	86	94	104	129

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)					
140-17068-1	A-6601,6602 QC M0010 FH BT	82	92	74					
140-17068-2	A-6603,6604 QC M0010 BH BT #1	105	174 *	79					
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	87	80	96					
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	93	97	100					
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESI TUBE BT #1	96	173 *	75					
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	84	172 *	78					

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

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

Matrix: Air

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
140-17068-13	A-6616 QC M0010 COMBINED	92	103	96
140-17068-14	A-6617 QC M0010 DI WATER RB	104	92	102
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	88	90	83
140-17068-19	A-6905 MEDIA CHECK XAD	91	91	76
140-17068-20	A-6906 MEDIA CHECK FILTER	77	87	86
140-17068-21	FH RL	93	86	82
140-17068-22	FH RL X2	86	83	76
140-17068-23	BH RL	96	91	71
140-17068-24	BH RL X2	86	102	71
140-17068-25	COND RL	92	90	105
140-17068-26	COND RL X2	98	84	108
LCS 320-336668/2-B	Lab Control Sample	100	95	106
LCS 320-336668/3-B	Lab Control Sample	97	89	112
LCS 320-336668/4-B	Lab Control Sample	98	90	118
LCS 320-336962/2-C	Lab Control Sample	90	98	86
LCS 320-336962/3-C	Lab Control Sample	84	99	91
LCS 320-336962/4-C	Lab Control Sample	80	95	85
LCS 320-337397/2-C	Lab Control Sample	109	119	91
LCS 320-337397/2-C	Lab Control Sample	88	121	96
LCS 320-337397/3-C	Lab Control Sample	99	109	90
LCS 320-337397/3-C	Lab Control Sample	86	127	104
LCS 320-337397/4-C	Lab Control Sample	104	105	87
LCS 320-337397/4-C	Lab Control Sample	84	139	92
MB 320-336668/1-B	Method Blank	84	93	113
MB 320-336962/1-C	Method Blank	83	96	91
MB 320-337397/1-C	Method Blank	95	95	97
MB 320-337397/1-C	Method Blank	83	128	107

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanoic acid (PFOA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanoic acid (PFNA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanoic acid (PFDA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotridecanoic acid (PFTriA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
Perfluorooctanesulfonamide (FOSA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
6:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
8:2 FTS	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
HFPO-DA (GenX)	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Major	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1
F-53B Minor	ND		0.250	0.245	ng/Sample		11/07/19 13:00	11/18/19 14:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFPeA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFHxA	*122*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFHpA	*123*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C5 PFNA	*112*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFUnA	*113*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFDoA	*104*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
18O2 PFHxS	*124*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C4 PFOS	*108*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
13C8 FOSA	*105*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*11/07/19 13:00*	*11/18/19 14:20*	*1*

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

Lab Sample ID: MB 320-336668/1-B
Matrix: Air
Analysis Batch: 339702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	96		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-8:2 FTS	84		25 - 150	11/07/19 13:00	11/18/19 14:20	1
M2-4:2 FTS	93		25 - 150	11/07/19 13:00	11/18/19 14:20	1
13C3 HFPO-DA	113		25 - 150	11/07/19 13:00	11/18/19 14:20	1

Lab Sample ID: LCS 320-336668/2-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	10.11		ng/Sample		101	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.532		ng/Sample		95	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	10.09		ng/Sample		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.773		ng/Sample		98	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.946		ng/Sample		99	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.18		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.22		ng/Sample		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.740		ng/Sample		97	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	10.06		ng/Sample		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.806		ng/Sample		88	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.807		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.983		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.271		ng/Sample		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.867		ng/Sample		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.332		ng/Sample		98	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	8.852		ng/Sample		95	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.918		ng/Sample		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.670		ng/Sample		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.529		ng/Sample		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.07		ng/Sample		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.76		ng/Sample		108	65 - 125
4:2 FTS	9.34	9.495		ng/Sample		102	70 - 130
6:2 FTS	9.48	9.684		ng/Sample		102	66 - 126
8:2 FTS	9.58	9.314		ng/Sample		97	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.782		ng/Sample		104	70 - 130
HFPO-DA (GenX)	10.0	10.97		ng/Sample		110	70 - 130
F-53B Major	9.32	9.408		ng/Sample		101	70 - 130
F-53B Minor	9.42	9.436		ng/Sample		100	70 - 130

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

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	109		25 - 150
13C5 PFPeA	108		25 - 150
13C2 PFHxA	107		25 - 150
13C4 PFHpA	112		25 - 150
13C4 PFOA	109		25 - 150
13C5 PFNA	112		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	112		25 - 150
13C2 PFDoA	116		25 - 150
13C2 PFTeDA	119		25 - 150
18O2 PFHxS	122		25 - 150
13C4 PFOS	111		25 - 150
13C8 FOSA	104		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	88		25 - 150
M2-6:2 FTS	95		25 - 150
M2-8:2 FTS	100		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	106		25 - 150

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.765		ng/Sample		98	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.322		ng/Sample		93	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.576		ng/Sample		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.537		ng/Sample		95	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	9.663		ng/Sample		97	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.37		ng/Sample		104	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.02		ng/Sample		100	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.490		ng/Sample		95	60 - 120
Perfluorododecanoic acid (PFDoA)	10.0	9.474		ng/Sample		95	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.531		ng/Sample		85	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	8.775		ng/Sample		88	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	7.955		ng/Sample		90	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.584		ng/Sample		92	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	7.746		ng/Sample		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.117		ng/Sample		96	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.036		ng/Sample		97	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.134		ng/Sample		95	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.489		ng/Sample		98	68 - 128

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

Lab Sample ID: LCS 320-336668/3-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	10.0	9.940		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	9.906		ng/Sample		99	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.768		ng/Sample		98	65 - 125
4:2 FTS	9.34	9.915		ng/Sample		106	70 - 130
6:2 FTS	9.48	9.822		ng/Sample		104	66 - 126
8:2 FTS	9.58	9.688		ng/Sample		101	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	9.698		ng/Sample		103	70 - 130
HFPO-DA (GenX)	10.0	10.60		ng/Sample		106	70 - 130
F-53B Major	9.32	9.194		ng/Sample		99	70 - 130
F-53B Minor	9.42	9.238		ng/Sample		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*113*		*25 - 150*
13C5 PFPeA	*111*		*25 - 150*
13C2 PFHxA	*112*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*111*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*113*		*25 - 150*
13C2 PFDoA	*110*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*110*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*84*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*89*		*25 - 150*
13C3 HFPO-DA	*112*		*25 - 150*

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	10.0	9.969		ng/Sample		100	70 - 130
Perfluoropentanoic acid (PFPeA)	10.0	9.911		ng/Sample		99	66 - 126
Perfluorohexanoic acid (PFHxA)	10.0	9.511		ng/Sample		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	10.0	9.977		ng/Sample		100	66 - 126
Perfluorooctanoic acid (PFOA)	10.0	10.43		ng/Sample		104	64 - 124
Perfluorononanoic acid (PFNA)	10.0	10.19		ng/Sample		102	68 - 128
Perfluorodecanoic acid (PFDA)	10.0	10.11		ng/Sample		101	69 - 129
Perfluoroundecanoic acid (PFUnA)	10.0	9.455		ng/Sample		95	60 - 120

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	10.0	9.978		ng/Sample		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	10.0	8.981		ng/Sample		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	10.0	9.275		ng/Sample		93	68 - 128
Perfluorobutanesulfonic acid (PFBS)	8.84	8.145		ng/Sample		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	9.38	8.875		ng/Sample		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	9.10	8.135		ng/Sample		89	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	9.52	9.753		ng/Sample		102	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.28	9.139		ng/Sample		98	67 - 127
Perfluorononanesulfonic acid (PFNS)	9.60	9.030		ng/Sample		94	70 - 130
Perfluorodecanesulfonic acid (PFDS)	9.64	9.069		ng/Sample		94	68 - 128
Perfluorooctanesulfonamide (FOSA)	10.0	9.913		ng/Sample		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.16		ng/Sample		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.50		ng/Sample		105	65 - 125
4:2 FTS	9.34	10.04		ng/Sample		108	70 - 130
6:2 FTS	9.48	9.599		ng/Sample		101	66 - 126
8:2 FTS	9.58	10.33		ng/Sample		108	67 - 127
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.42	10.05		ng/Sample		107	70 - 130
HFPO-DA (GenX)	10.0	10.37		ng/Sample		104	70 - 130
F-53B Major	9.32	9.671		ng/Sample		104	70 - 130
F-53B Minor	9.42	8.429		ng/Sample		89	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*109*		*25 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C4 PFHpA	*113*		*25 - 150*
13C4 PFOA	*109*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
18O2 PFHxS	*114*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
d3-NMeFOSAA	*85*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*99*		*25 - 150*

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

Lab Sample ID: LCS 320-336668/4-B
Matrix: Air
Analysis Batch: 339120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336668

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	98		25 - 150
M2-4:2 FTS	90		25 - 150
13C3 HFPO-DA	118		25 - 150

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanoic acid (PFPeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanoic acid (PFHxA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanoic acid (PFOA)	1.299	I	1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanoic acid (PFNA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanoic acid (PFDA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotridecanoic acid (PFTriA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorononanesulfonic acid (PFNS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
6:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
8:2 FTS	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
HFPO-DA (GenX)	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Major	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1
F-53B Minor	ND		1.04	1.02	ng/Sample		11/08/19 14:30	11/21/19 20:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C5 PFPeA	94		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFHxA	104		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFHpA	105		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFOA	102		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C5 PFNA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1

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

Lab Sample ID: MB 320-336962/1-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	97		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFUnA	101		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFDoA	102		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C2 PFTeDA	98		25 - 150	11/08/19 14:30	11/21/19 20:32	1
18O2 PFHxS	109		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C4 PFOS	97		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C8 FOSA	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
d3-NMeFOSAA	93		25 - 150	11/08/19 14:30	11/21/19 20:32	1
d5-NEtFOSAA	104		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-6:2 FTS	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-8:2 FTS	83		25 - 150	11/08/19 14:30	11/21/19 20:32	1
M2-4:2 FTS	96		25 - 150	11/08/19 14:30	11/21/19 20:32	1
13C3 HFPO-DA	91		25 - 150	11/08/19 14:30	11/21/19 20:32	1

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	47.47		ng/Sample		119	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.17		ng/Sample		103	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	41.57		ng/Sample		104	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	41.60		ng/Sample		104	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	41.85		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.53		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.14		ng/Sample		103	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.55		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.32		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.61		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.38		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	35.84		ng/Sample		96	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.73		ng/Sample		84	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.13		ng/Sample		108	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	40.15		ng/Sample		108	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	40.25		ng/Sample		105	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	41.37		ng/Sample		107	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.58		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.01		ng/Sample		105	60 - 140

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

Lab Sample ID: LCS 320-336962/2-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.65		ng/Sample		104	60 - 140
4:2 FTS	37.4	38.47		ng/Sample		103	60 - 140
6:2 FTS	37.9	40.44		ng/Sample		107	60 - 140
8:2 FTS	38.3	39.07		ng/Sample		102	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	45.26		ng/Sample		120	60 - 140
HFPO-DA (GenX)	40.0	49.23		ng/Sample		123	60 - 140
F-53B Major	37.3	41.87		ng/Sample		112	60 - 140
F-53B Minor	37.7	37.66		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*106*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*100*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*
13C2 PFTeDA	*102*		*25 - 150*
18O2 PFHxS	*112*		*25 - 150*
13C4 PFOS	*94*		*25 - 150*
13C8 FOSA	*93*		*25 - 150*
d3-NMeFOSAA	*92*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*
M2-8:2 FTS	*90*		*25 - 150*
M2-4:2 FTS	*98*		*25 - 150*
13C3 HFPO-DA	*86*		*25 - 150*

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.00		ng/Sample		115	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	39.98		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.87		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.82		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.67		ng/Sample		102	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.80		ng/Sample		110	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.94		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.15		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.11		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.91		ng/Sample		97	60 - 140

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

Lab Sample ID: LCS 320-336962/3-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorotetradecanoic acid (PFTeA)			40.0	40.19		ng/Sample		100	60 - 140		
Perfluorobutanesulfonic acid (PFBS)			35.4	33.19		ng/Sample		94	60 - 140		
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.75		ng/Sample		98	60 - 140		
Perfluorohexanesulfonic acid (PFHxS)			36.4	31.50		ng/Sample		87	60 - 140		
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.60		ng/Sample		107	60 - 140		
Perfluorooctanesulfonic acid (PFOS)			37.1	41.14		ng/Sample		111	60 - 140		
Perfluorononanesulfonic acid (PFNS)			38.4	41.02		ng/Sample		107	60 - 140		
Perfluorodecanesulfonic acid (PFDS)			38.6	41.37		ng/Sample		107	60 - 140		
Perfluorooctanesulfonamide (FOSA)			40.0	41.78		ng/Sample		104	60 - 140		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.83		ng/Sample		107	60 - 140		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.01		ng/Sample		105	60 - 140		
4:2 FTS			37.4	37.09		ng/Sample		99	60 - 140		
6:2 FTS			37.9	43.24		ng/Sample		114	60 - 140		
8:2 FTS			38.3	40.76		ng/Sample		106	60 - 140		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	43.97		ng/Sample		117	60 - 140		
HFPO-DA (GenX)			40.0	44.57		ng/Sample		111	60 - 140		
F-53B Major			37.3	43.37		ng/Sample		116	60 - 140		
F-53B Minor			37.7	37.89		ng/Sample		101	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*96*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*104*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
13C8 FOSA	*92*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
M2-6:2 FTS	*93*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*99*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.48		ng/Sample		116	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.46		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.21		ng/Sample		101	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.25		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	42.08		ng/Sample		105	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.34		ng/Sample		108	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.66		ng/Sample		102	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.00		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.00		ng/Sample		100	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	41.39		ng/Sample		103	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.22		ng/Sample		96	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.97		ng/Sample		99	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.49		ng/Sample		87	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.15		ng/Sample		103	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	38.87		ng/Sample		105	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.54		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.18		ng/Sample		104	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	40.92		ng/Sample		102	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.09		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.00		ng/Sample		103	60 - 140
4:2 FTS	37.4	36.89		ng/Sample		99	60 - 140
6:2 FTS	37.9	41.61		ng/Sample		110	60 - 140
8:2 FTS	38.3	40.96		ng/Sample		107	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.08		ng/Sample		117	60 - 140
HFPO-DA (GenX)	40.0	49.79		ng/Sample		124	60 - 140
F-53B Major	37.3	41.22		ng/Sample		111	60 - 140
F-53B Minor	37.7	37.49		ng/Sample		100	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*

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

Lab Sample ID: LCS 320-336962/4-C
Matrix: Air
Analysis Batch: 340564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 336962

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFUnA	101		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	100		25 - 150
18O2 PFHxS	105		25 - 150
13C4 PFOS	96		25 - 150
13C8 FOSA	95		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	101		25 - 150
M2-6:2 FTS	89		25 - 150
M2-8:2 FTS	80		25 - 150
M2-4:2 FTS	95		25 - 150
13C3 HFPO-DA	85		25 - 150

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.173		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanoic acid (PFOA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

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

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 343812

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
F-53B Minor	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/05/19 20:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFPeA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFHxA	*94*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFHpA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDA	*92*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFUnA	*91*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C8 FOSA	*82*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-6:2 FTS	*102*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
M2-4:2 FTS	*95*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*
13C3 HFPO-DA	*97*		*25 - 150*	*11/10/19 11:40*	*12/05/19 20:26*	*1*

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.974		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoropentanoic acid (PFPeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorohexanoic acid (PFHxA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanoic acid (PFOA)	1.084	I	1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorononanoic acid (PFNA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorodecanoic acid (PFDA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorotridecanoic acid (PFTriA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorononanesulfonic acid (PFNS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
Perfluorooctanesulfonamide (FOSA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1

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

Lab Sample ID: MB 320-337397/1-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 337397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
4:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
6:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
8:2 FTS	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
HFPO-DA (GenX)	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
F-53B Major	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1
F-53B Minor	ND		1.00	0.980	ng/Sample		11/10/19 11:40	12/20/19 18:08	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C5 PFPeA	*97*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFHxA	*100*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFHpA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFOA	*97*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C5 PFNA	*91*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFDA	*80*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFDoA	*89*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
18O2 PFHxS	*88*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C4 PFOS	*84*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C8 FOSA	*86*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-6:2 FTS	*129*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-8:2 FTS	*83*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
M2-4:2 FTS	*128*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C3 HFPO-DA	*107*		*25 - 150*	*11/10/19 11:40*	*12/20/19 18:08*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOA				*11/10/19 11:40*	*12/20/19 18:08*	*1*
13C8 PFOS				*11/10/19 11:40*	*12/20/19 18:08*	*1*

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.85	B	ng/Sample		112	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	38.94		ng/Sample		97	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	39.66		ng/Sample		99	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.15		ng/Sample		100	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	36.96		ng/Sample		92	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.49		ng/Sample		106	60 - 140

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	43.69		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	39.05		ng/Sample		98	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.06		ng/Sample		95	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	36.12		ng/Sample		90	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	36.16		ng/Sample		90	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	34.04		ng/Sample		96	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.37		ng/Sample		97	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.67		ng/Sample		95	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	47.12		ng/Sample		124	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.53		ng/Sample		96	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	37.80		ng/Sample		98	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.62		ng/Sample		105	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.63		ng/Sample		107	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.05		ng/Sample		105	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	39.83		ng/Sample		100	60 - 140
4:2 FTS	37.4	42.36		ng/Sample		113	60 - 140
6:2 FTS	37.9	38.96		ng/Sample		103	60 - 140
8:2 FTS	38.3	44.75		ng/Sample		117	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	44.40		ng/Sample		118	60 - 140
HFPO-DA (GenX)	40.0	41.76		ng/Sample		104	60 - 140
F-53B Major	37.3	43.65		ng/Sample		117	60 - 140
F-53B Minor	37.7	31.23		ng/Sample		83	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*95*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*87*		*25 - 150*
13C2 PFDA	*85*		*25 - 150*
13C2 PFUnA	*90*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*85*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d3-NMeFOSAA	83		25 - 150
d5-NEtFOSAA	95		25 - 150
M2-6:2 FTS	113		25 - 150
M2-8:2 FTS	109		25 - 150
M2-4:2 FTS	119		25 - 150
13C3 HFPO-DA	91		25 - 150

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.49		ng/Sample		104	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.06		ng/Sample		100	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	39.96		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.63		ng/Sample		107	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	40.35		ng/Sample		101	60 - 140
Perfluorononanoic acid (PFNA)	40.0	42.39		ng/Sample		106	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.18		ng/Sample		98	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	35.58		ng/Sample		89	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	38.21		ng/Sample		96	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	37.16		ng/Sample		93	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	38.85		ng/Sample		97	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	39.29		ng/Sample		111	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.44		ng/Sample		113	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.37		ng/Sample		105	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.77		ng/Sample		112	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	36.89		ng/Sample		99	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.45		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	39.56		ng/Sample		103	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.40		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	38.38		ng/Sample		96	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.96		ng/Sample		92	60 - 140
4:2 FTS	37.4	32.39		ng/Sample		87	60 - 140
6:2 FTS	37.9	31.95		ng/Sample		84	60 - 140
8:2 FTS	38.3	37.55		ng/Sample		98	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.87		ng/Sample		111	60 - 140
HFPO-DA (GenX)	40.0	42.88		ng/Sample		107	60 - 140

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

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Major			37.3	38.60		ng/Sample		104	60 - 140		
F-53B Minor			37.7	35.31		ng/Sample		94	60 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*90*		*25 - 150*
13C5 PFPeA	*89*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*80*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
18O2 PFHxS	*83*		*25 - 150*
13C4 PFOS	*86*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*90*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
M2-6:2 FTS	*130*		*25 - 150*
M2-8:2 FTS	*88*		*25 - 150*
M2-4:2 FTS	*121*		*25 - 150*
13C3 HFPO-DA	*96*		*25 - 150*

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)			40.0	42.68	B	ng/Sample		107	60 - 140		
Perfluoropentanoic acid (PFPeA)			40.0	38.23		ng/Sample		96	60 - 140		
Perfluorohexanoic acid (PFHxA)			40.0	38.79		ng/Sample		97	60 - 140		
Perfluoroheptanoic acid (PFHpA)			40.0	41.53		ng/Sample		104	60 - 140		
Perfluorooctanoic acid (PFOA)			40.0	38.04		ng/Sample		95	60 - 140		
Perfluorononanoic acid (PFNA)			40.0	44.18		ng/Sample		110	60 - 140		
Perfluorodecanoic acid (PFDA)			40.0	42.43		ng/Sample		106	60 - 140		
Perfluoroundecanoic acid (PFUnA)			40.0	39.24		ng/Sample		98	60 - 140		
Perfluorododecanoic acid (PFDoA)			40.0	39.90		ng/Sample		100	60 - 140		
Perfluorotridecanoic acid (PFTriA)			40.0	37.86		ng/Sample		95	60 - 140		
Perfluorotetradecanoic acid (PFTeA)			40.0	38.26		ng/Sample		96	60 - 140		
Perfluorobutanesulfonic acid (PFBS)			35.4	35.60		ng/Sample		101	60 - 140		
Perfluoropentanesulfonic acid (PFPeS)			37.5	37.85		ng/Sample		101	60 - 140		
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.57		ng/Sample		98	60 - 140		

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.61		ng/Sample		115	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.17		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	36.79		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.93		ng/Sample		98	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	42.28		ng/Sample		106	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.67		ng/Sample		102	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.71		ng/Sample		104	60 - 140
4:2 FTS	37.4	41.80		ng/Sample		112	60 - 140
6:2 FTS	37.9	37.37		ng/Sample		99	60 - 140
8:2 FTS	38.3	46.85		ng/Sample		122	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	46.98		ng/Sample		125	60 - 140
HFPO-DA (GenX)	40.0	42.47		ng/Sample		106	60 - 140
F-53B Major	37.3	40.84		ng/Sample		110	60 - 140
F-53B Minor	37.7	29.57		ng/Sample		78	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*98*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*96*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*88*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*84*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*110*		*25 - 150*
M2-8:2 FTS	*99*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*90*		*25 - 150*

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.05		ng/Sample		105	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.50		ng/Sample		104	60 - 140

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	40.0	42.75		ng/Sample		107	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.66		ng/Sample		107	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	37.59		ng/Sample		94	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.61		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.61		ng/Sample		99	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	38.69		ng/Sample		97	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	40.91		ng/Sample		102	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	37.39		ng/Sample		93	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	35.58		ng/Sample		89	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	37.31		ng/Sample		106	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.99		ng/Sample		104	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.98		ng/Sample		96	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.98		ng/Sample		113	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.23		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	36.92		ng/Sample		96	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.43		ng/Sample		97	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.70		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.71		ng/Sample		99	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	35.63		ng/Sample		89	60 - 140
4:2 FTS	37.4	33.51		ng/Sample		90	60 - 140
6:2 FTS	37.9	32.11		ng/Sample		85	60 - 140
8:2 FTS	38.3	38.35		ng/Sample		100	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.25		ng/Sample		115	60 - 140
HFPO-DA (GenX)	40.0	39.29		ng/Sample		98	60 - 140
F-53B Major	37.3	39.66		ng/Sample		106	60 - 140
F-53B Minor	37.7	35.18		ng/Sample		93	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C4 PFOA	*98*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*82*		*25 - 150*
13C2 PFUnA	*92*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*

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

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFTeDA	*99*		*25 - 150*
18O2 PFHxS	*89*		*25 - 150*
13C4 PFOS	*87*		*25 - 150*
13C8 FOSA	*85*		*25 - 150*
d3-NMeFOSAA	*99*		*25 - 150*
d5-NEtFOSAA	*111*		*25 - 150*
M2-6:2 FTS	*133*		*25 - 150*
M2-8:2 FTS	*86*		*25 - 150*
M2-4:2 FTS	*127*		*25 - 150*
13C3 HFPO-DA	*104*		*25 - 150*

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.94	B	ng/Sample		107	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	40.34		ng/Sample		101	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.14		ng/Sample		100	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	40.86		ng/Sample		102	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	38.08		ng/Sample		95	60 - 140
Perfluorononanoic acid (PFNA)	40.0	41.55		ng/Sample		104	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	43.72		ng/Sample		109	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	36.95		ng/Sample		92	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.64		ng/Sample		99	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	38.70		ng/Sample		97	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	37.27		ng/Sample		93	60 - 140
Perfluorobutanesulfonic acid (PFBS)	35.4	33.36		ng/Sample		94	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	36.69		ng/Sample		98	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.55		ng/Sample		98	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	45.12		ng/Sample		118	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	34.30		ng/Sample		92	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	38.51		ng/Sample		100	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	38.89		ng/Sample		101	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.52		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.04		ng/Sample		103	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.03		ng/Sample		105	60 - 140
4:2 FTS	37.4	43.86		ng/Sample		117	60 - 140

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

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 343137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	37.9	39.22		ng/Sample		103	60 - 140
8:2 FTS	38.3	42.23		ng/Sample		110	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	53.06	*	ng/Sample		141	60 - 140
HFPO-DA (GenX)	40.0	40.53		ng/Sample		101	60 - 140
F-53B Major	37.3	41.43		ng/Sample		111	60 - 140
F-53B Minor	37.7	31.85		ng/Sample		85	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*92*		*25 - 150*
13C5 PFPeA	*91*		*25 - 150*
13C2 PFHxA	*102*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*90*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*89*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
18O2 PFHxS	*85*		*25 - 150*
13C4 PFOS	*75*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*86*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*104*		*25 - 150*
M2-4:2 FTS	*105*		*25 - 150*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.29		ng/Sample		108	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	42.16		ng/Sample		105	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	40.76		ng/Sample		102	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	42.28		ng/Sample		106	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	37.57		ng/Sample		94	60 - 140
Perfluorononanoic acid (PFNA)	40.0	43.59		ng/Sample		109	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.64		ng/Sample		104	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	37.90		ng/Sample		95	60 - 140
Perfluorododecanoic acid (PFDoA)	40.0	39.26		ng/Sample		98	60 - 140
Perfluorotridecanoic acid (PFTriA)	40.0	35.60		ng/Sample		89	60 - 140
Perfluorotetradecanoic acid (PFTeA)	40.0	39.20		ng/Sample		98	60 - 140

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

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air
Analysis Batch: 347676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 337397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	37.70		ng/Sample		107	60 - 140
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.88		ng/Sample		106	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.37		ng/Sample		97	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.40		ng/Sample		111	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	35.39		ng/Sample		95	60 - 140
Perfluorononanesulfonic acid (PFNS)	38.4	35.20		ng/Sample		92	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	37.01		ng/Sample		96	60 - 140
Perfluorooctanesulfonamide (FOSA)	40.0	41.77		ng/Sample		104	60 - 140
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.91		ng/Sample		100	60 - 140
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.64		ng/Sample		92	60 - 140
4:2 FTS	37.4	33.38		ng/Sample		89	60 - 140
6:2 FTS	37.9	33.04		ng/Sample		87	60 - 140
8:2 FTS	38.3	36.63		ng/Sample		96	60 - 140
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	48.00		ng/Sample		127	60 - 140
HFPO-DA (GenX)	40.0	41.76		ng/Sample		104	60 - 140
F-53B Major	37.3	40.99		ng/Sample		110	60 - 140
F-53B Minor	37.7	39.46		ng/Sample		105	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*83*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFHpA	*83*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*77*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*92*		*25 - 150*
13C2 PFTeDA	*96*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*122*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
M2-4:2 FTS	*139*		*25 - 150*
13C3 HFPO-DA	*92*		*25 - 150*

LCMS

Prep Batch: 336668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	None	
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	None	
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	None	
140-17068-25	COND RL	Total/NA	Air	None	
140-17068-26	COND RL X2	Total/NA	Air	None	
MB 320-336668/1-B	Method Blank	Total/NA	Air	None	
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	None	
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 336880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	Preparation	336668
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	Preparation	336668
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	Preparation	336668
140-17068-25	COND RL	Total/NA	Air	Preparation	336668
140-17068-26	COND RL X2	Total/NA	Air	Preparation	336668
MB 320-336668/1-B	Method Blank	Total/NA	Air	Preparation	336668
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	Preparation	336668
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	Preparation	336668

Prep Batch: 336962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	None	
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	None	
140-17068-21	FH RL	Total/NA	Air	None	
140-17068-22	FH RL X2	Total/NA	Air	None	
MB 320-336962/1-C	Method Blank	Total/NA	Air	None	
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 337396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	Split	336962
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	Split	336962
140-17068-21	FH RL	Total/NA	Air	Split	336962
140-17068-22	FH RL X2	Total/NA	Air	Split	336962
MB 320-336962/1-C	Method Blank	Total/NA	Air	Split	336962
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Split	336962
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Split	336962

Prep Batch: 337397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	None	
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	None	
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	None	
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	None	
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	None	

LCMS (Continued)

Prep Batch: 337397 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	None	
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	None	
140-17068-23	BH RL	Total/NA	Air	None	
140-17068-24	BH RL X2	Total/NA	Air	None	
MB 320-337397/1-C	Method Blank	Total/NA	Air	None	
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	None	
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	None	

Cleanup Batch: 338209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	Preparation	337396
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	Preparation	337396
140-17068-21	FH RL	Total/NA	Air	Preparation	337396
140-17068-22	FH RL X2	Total/NA	Air	Preparation	337396
MB 320-336962/1-C	Method Blank	Total/NA	Air	Preparation	337396
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	Preparation	337396
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	Preparation	337396

Cleanup Batch: 338295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	Split	337397
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Split	337397
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Split	337397
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Split	337397
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	Split	337397
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Split	337397
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	Split	337397
140-17068-23	BH RL	Total/NA	Air	Split	337397
140-17068-24	BH RL X2	Total/NA	Air	Split	337397
MB 320-337397/1-C	Method Blank	Total/NA	Air	Split	337397
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Split	337397
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Split	337397

Cleanup Batch: 338717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	Preparation	338295
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RII	Total/NA	Air	Preparation	338295
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	Preparation	338295
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	Preparation	338295
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	Preparation	338295
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	Preparation	338295
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	Preparation	338295
140-17068-23	BH RL	Total/NA	Air	Preparation	338295
140-17068-24	BH RL X2	Total/NA	Air	Preparation	338295
MB 320-337397/1-C	Method Blank	Total/NA	Air	Preparation	338295
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	Preparation	338295
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	Preparation	338295

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

LCMS

Analysis Batch: 339120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	537 (modified)	336880
140-17068-14	A-6617 QC M0010 DI WATER RB	Total/NA	Air	537 (modified)	336880
140-17068-25	COND RL	Total/NA	Air	537 (modified)	336880
140-17068-26	COND RL X2	Total/NA	Air	537 (modified)	336880
LCS 320-336668/2-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/3-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880
LCS 320-336668/4-B	Lab Control Sample	Total/NA	Air	537 (modified)	336880

Analysis Batch: 339702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-336668/1-B	Method Blank	Total/NA	Air	537 (modified)	336880

Analysis Batch: 340564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Total/NA	Air	537 (modified)	338209
140-17068-20	A-6906 MEDIA CHECK FILTER	Total/NA	Air	537 (modified)	338209
140-17068-21	FH RL	Total/NA	Air	537 (modified)	338209
140-17068-22	FH RL X2	Total/NA	Air	537 (modified)	338209
MB 320-336962/1-C	Method Blank	Total/NA	Air	537 (modified)	338209
LCS 320-336962/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209
LCS 320-336962/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338209

Analysis Batch: 343137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717

Analysis Batch: 343812

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RI	Total/NA	Air	537 (modified)	338717
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RI	Total/NA	Air	537 (modified)	338717
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Total/NA	Air	537 (modified)	338717
140-17068-19	A-6905 MEDIA CHECK XAD	Total/NA	Air	537 (modified)	338717
140-17068-23	BH RL	Total/NA	Air	537 (modified)	338717
140-17068-24	BH RL X2	Total/NA	Air	537 (modified)	338717
MB 320-337397/1-C	Method Blank	Total/NA	Air	537 (modified)	338717

Analysis Batch: 347676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Total/NA	Air	537 (modified)	338717
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RE	Total/NA	Air	537 (modified)	338717
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Total/NA	Air	537 (modified)	338717
MB 320-337397/1-C	Method Blank	Total/NA	Air	537 (modified)	338717
LCS 320-337397/2-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/3-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717
LCS 320-337397/4-C	Lab Control Sample	Total/NA	Air	537 (modified)	338717

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

LCMS

Analysis Batch: 349852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17068-3 - RA	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Total/NA	Air	537 (modified)	336880

Client Sample ID: A-6601,6602 QC M0010 FH BT #1

Lab Sample ID: 140-17068-1

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:40	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: A-6603,6604 QC M0010 BH BT #1

Lab Sample ID: 140-17068-2

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:47	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6605 QC M0010 IMP 1,2&3 COND BT #1

Lab Sample ID: 140-17068-3

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25143 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 01:40	P1N	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None	RA		0.25143 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation	RA		250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			349852	01/09/20 16:38	JRB	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1

Lab Sample ID: 140-17068-4

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 20:56	GMK	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1

Lab Sample ID: 140-17068-5

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:57	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6615 QC M0010 XAD-2 RESIN TUBE TB

Lab Sample ID: 140-17068-11

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/19/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 19:07	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB

Lab Sample ID: 140-17068-13

Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 21:36	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6617 QC M0010 DI WATER RB

Lab Sample ID: 140-17068-14

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			0.25 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:00	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: A-6618 QC M0010 MEOH WITH 5% NH4OH RB

Lab Sample ID: 140-17068-15

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:16	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6905 MEDIA CHECK XAD

Lab Sample ID: 140-17068-19

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:46	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: A-6906 MEDIA CHECK FILTER

Lab Sample ID: 140-17068-20

Date Collected: 10/13/19 00:00
Date Received: 10/19/19 09:30

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:50	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: FH RL

Lab Sample ID: 140-17068-21

Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			25 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 22:00	S1M	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: FH RL X2

Lab Sample ID: 140-17068-22
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			25 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 22:29	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: BH RL

Lab Sample ID: 140-17068-23
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			180 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 22:56	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: BH RL X2

Lab Sample ID: 140-17068-24
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			180 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 23:06	GMK	TAL SAC
	Instrument ID: A9									

Client Sample ID: COND RL

Lab Sample ID: 140-17068-25
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	500 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:19	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: COND RL X2

Lab Sample ID: 140-17068-26
Matrix: Air
Date Collected: 10/21/19 00:00
Date Received: 10/21/19 13:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	500 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 02:29	P1N	TAL SAC
	Instrument ID: A9									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336668/1-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339702	11/18/19 14:20	VPM	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-336962/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:32	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-337397/1-C

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343812	12/05/19 20:26	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:08	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/2-B

Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/16/19 23:54	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/3-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:03	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336668/4-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	250 mL	336668	11/07/19 13:00		TAL SAC
Total/NA	Cleanup	Preparation			250 mL	10.00 mL	336880	11/08/19 10:25		TAL SAC
Total/NA	Analysis	537 (modified)		1			339120	11/17/19 00:13	P1N	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:42	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/3-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 20:51	S1M	TAL SAC
	Instrument ID: A12									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-336962/4-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	50 mL	336962	11/08/19 14:30		TAL SAC
Total/NA	Cleanup	Split			12 mL	2 mL	337396	11/10/19 05:45		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338209	11/13/19 13:20		TAL SAC
Total/NA	Analysis	537 (modified)		1			340564	11/21/19 21:01	S1M	TAL SAC
	Instrument ID: A12									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/2-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:45	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:18	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/3-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 12:55	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:27	P1N	TAL SAC
	Instrument ID: A9_NC									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 320-337397/4-C
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			343137	12/04/19 13:05	GMK	TAL SAC
	Instrument ID: A9									
Total/NA	Prep	None			1 Sample	360 mL	337397	11/10/19 11:40		TAL SAC
Total/NA	Cleanup	Split			90 mL	2 mL	338295	11/13/19 15:50		TAL SAC
Total/NA	Cleanup	Preparation			2 mL	10.00 mL	338717	11/15/19 07:45		TAL SAC
Total/NA	Analysis	537 (modified)		1			347676	12/20/19 18:37	P1N	TAL SAC
	Instrument ID: A9_NC									

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-1
Project/Site: M0010 QC Samples (MeOH)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17068-1
Project/Site: M0010 QC Samples (MeOH)

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-29-20 *
Hawaii	State	<cert No.>	01-29-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20 *
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
None	Leaching Procedure	TAL SOP	TAL SAC
None	Leaching Procedure for Condensate	TAL SOP	TAL SAC
None	Leaching Procedure for XAD	TAL SOP	TAL SAC
Preparation	Dilution	None	TAL SAC
Split	Source Air Split	None	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency
None = None
TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: M0010 QC Samples (MeOH)

Job ID: 140-17068-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17068-1	A-6601,6602 QC M0010 FH BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-2	A-6603,6604 QC M0010 BH BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-3	A-6605 QC M0010 IMP 1,2&3 COND BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-4	A-6606 QC M0010 IMP GLASSWARE MEOH RINSE BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-5	A-6607 QC M0010 BREAKTHROUGH XAD-2 RESIN TUBE BT #1	Air	10/15/19 00:00	10/19/19 09:30	
140-17068-11	A-6615 QC M0010 XAD-2 RESIN TUBE TB	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-13	A-6616 QC M0010 COMBINED GLASSWARE RINSES (MEOH/5% NH4OH) PB	Air	10/14/19 00:00	10/21/19 08:45	
140-17068-14	A-6617 QC M0010 DI WATER RB	Air	10/13/19 00:00	10/21/19 08:45	
140-17068-15	A-6618 QC M0010 MEOH WITH 5% NH4OH RB	Air	10/13/19 00:00	10/21/19 08:45	
140-17068-19	A-6905 MEDIA CHECK XAD	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-20	A-6906 MEDIA CHECK FILTER	Air	10/13/19 00:00	10/19/19 09:30	
140-17068-21	FH RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-22	FH RL X2	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-23	BH RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-24	BH RL X2	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-25	COND RL	Air	10/21/19 00:00	10/21/19 13:00	
140-17068-26	COND RL X2	Air	10/21/19 00:00	10/21/19 13:00	

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility
Stack Testing for PFAS – Field QC Samples

eurofins | Environment Testing TestAmerica

Project Identification:	Moose Creek Facility Testing
Client Name:	USEPA
Client Contact:	Mr. Jeff Ryan (EPA) Office: (919) 541-1437
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Packag	140-17068 Chain of Custody

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	(865) 291-3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Analytical Parameter:	Holding Time Requirements:	Preservation Requirements:
Method 537 PFAS Compounds	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C

Field BLANKS & Proof & Trip

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6601 QC M0010 Filter BT #1 (Combine with *A-6602*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6602 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #1 (Combine with *A-6601*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6603 QC M0010 XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6604 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #1 (Combine with *A-6603*)	QC	10/15/19	Blank Train #1	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6605 QC M0010 Impingers 1,2 & 3 Condensate BT #1	QC	10/15/19	Blank Train #1	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
A-6606 QC M0010 Impinger Glassware MeOH Rinse BT #1	QC	10/15/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.
A-6607 QC M0010 Breakthrough XAD-2 Resin Tube BT #1	QC	10/15/19	Blank Train #1	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #1 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6608 QC M0010 Filter BT #2 (Combine with *A-6609*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Particulate Filter (82.6 mm Whatman Glass Microfiber)** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Front-Half Probe Rinse to assist the solvent extraction of the Particulate Filter sample. **West Sacramento**: Analyze for Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6609 QC M0010 FH of Filter Holder & Probe MeOH Rinse BT #2 (Combine with *A-6608*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Front Half of Filter Holder & Probe Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample in the Particulate Filter extraction.
A-6610 QC M0010 XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6611 QC M0010 BH of Filter Holder & Coil Condenser MeOH Rinse BT #2 (Combine with *A-6610*)	QC	10/15/19	Blank Train #2	125 mL HDPE Wide-Mouth Bottle	**Back Half of Filter Holder & Coil Condenser Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Use this solvent sample and the Impinger Glassware Methanol Rinse in the XAD-2 Resin extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6612 QC M0010 Impingers 1,2 & 3 Condensate BT #2	QC	10/15/19	Blank Train #2	1 Liter HDPE Wide-Mouth Bottle	**Impinger #1, #2 & #3 Condensate** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure the volume of the Impinger Composite and forward a 250 mL portion to W. Sacramento for analysis. **W. Sacramento**: Analyze a 250 mL portion of the sample for Method 537 Analyte List.
x2 A-6613 QC M0010 Impinger Glassware MeOH Rinse BT #2	QC	10/15/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Impinger Glassware Methanol/5% Ammonium Hydroxide Rinse** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Measure volume received and top off to standard volume increment. **West Sacramento**: Analyze separately for the Method 537 Analyte List.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
A-6614 QC M0010 Breakthrough XAD-2 Resin Tube BT #2	QC	10/15/19	Blank Train #2	XAD-2 Resin Tube	**Breakthrough XAD-2 Resin Tube** Method 0010 Blank Train #2 Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level and perform the regular XAD-2 Resin Extraction. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6615 QC M0010 XAD-2 Resin Tube TB $ D2356 Included	QC	10/13/19 10-15-19	Trip Blank	XAD-2 Resin Tube	**XAD-2 Resin Tube Trip Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Spike sample with the Isotope Dilution Internal Standard (IDIS) at the regular level. Use the Back-Half Glassware Rinse and the Impinger Glassware Methanol Rinse to assist the solvent extraction of the XAD-2 resin sample. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6616 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/14/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6617 QC M0010 DI Water RB	QC	10/13/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
A-6618 QC M0010 MeOH with 5% NH_4OH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4 C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FedEx # 7767 5942 3982 FOS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19 11:45
Accepted By:	W.M. Hoover	AST	10/17/19 11:45
Relinquished By:	W.M. Hoover	AST	10/18/19
Accepted By:	Amy Damon	ETA KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
D-2357 QC M0010 Combined Glassware Rinses (MeOH/5% NH_4OH) PB	QC	10/16/19	Proof Blank	250 mL HDPE Wide-Mouth Bottle	**Front Half, Back Half and Impinger Glassware Rinses Composite Proof Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Proof Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2358 QC M0010 DI Water RB	QC	10/16/19	Reagent Blank	500 mL HDPE Wide-Mouth Bottle	**Deionized (DI) Water Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2359 QC M0010 $MeCl_2$ RB	QC	NC	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methylene Chloride ($MeCl_2$) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.
D-2360 QC M0010 MeOH with 5% NH_4OH RB	QC	10/16/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Methanol/5% Ammonium Hydroxide (NH_4OH) Reagent Blank** Method 0010 Train Method 537 Analysis	**Knoxville**: Prepare this Reagent Blank for analysis and forward the extract to W. Sacramento for analysis. **West Sacramento**: Analyze for Method 537 Analyte List.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 5.5, 5.3, 5.2, 4.2, 17.4 / CT 5.5, 5.3, 5.2, 4.2, 17.4'C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 5 COOLERS FEDEX# 776539422982m FOS

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Dony Calill	ETA	10/17/19 12:00
Accepted By:		AST	10/17/19 12:30
Relinquished By:		AST	10/18/19 11:3
Accepted By:		ETA KNX	10-19-19 09:30
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
17068

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:** _____

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**	4, A-6616, A-6617, A-6618
2. Were ambient air containers received intact?			✓	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	✓	✓		☑ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**	
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**	
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**	
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**	
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**	
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**	
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**	**Labeling Verified by:** **Date:**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**	
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**	**pH test strip lot number:**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**	
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**	
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**	
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**	
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info	

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: Ryan Newman Date: 10-21-19

QA026R32.doc, 062719

1/21/2020

APPENDIX D: Test America Modified Method 18 Analytical Results

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17065-1
Client Project/Site: MM-18 Field Samples (Task .60)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 1:54:38 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17065-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17065-1

Sample Receipt

The samples were received on October 21, 2019 at 8:45 AM. The temperature of the cooler at receipt was 17.4º C.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

Receipt Exceptions

All samples were received at the laboratory outside the required temperature criteria.

GC/MS VOA

Impinger Sample Preparation and Analysis: Impinger samples were analyzed for the volatile organic target analytes by purge and trap GCMS using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MS-0015, based on the following method:

· SW-846 8260B, “Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)”

Each sample is prepared by adding a known amount of sample to the purge water in a purge and trap vessel and spiking with internal standards, surrogates, and matrix spike analytes (as needed). Volatile compounds are introduced into the gas chromatograph by the purge and trap method. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34666 recovered above the upper control limit for Bromomethane. The samples associated with this CCV were non-detects above the reporting limit for the affected analytes; therefore, the data have been reported.

Method 8260B: The laboratory control sample (LCS) for preparation batch 140-34633 and analytical batch 140-34666 recovered outside control limits for the following analytes: Bromomethane and Trichlorofluoromethane. These analytes were biased high in the LCS and were not detected above the reporting limit in the associated samples; therefore, the data have been reported.

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34698 recovered above the upper control limit for Bromomethane and Trichlorofluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Job ID: 140-17065-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Method 8260B: The laboratory control sample (LCS) for preparation batch 140-34636 and analytical batch 140-34698 recovered outside control limits for the following analytes: Bromomethane and Trichlorofluoromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34730 recovered above the upper control limit for Bromomethane and Trichlorofluoromethane. The samples associated with the matrix spikes linked to this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34908 recovered above the upper control limit for Bromomethane and Chloroethane. The samples associated with the matrix spike duplicates linked to this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260B: Reanalysis of the following sample was performed outside of the analytical holding time due to surrogate recovery outside QC limits in the initial analysis. M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1 (140-17065-1[MSD])

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34990 recovered above the upper control limit for Bromomethane and Trichlorofluoromethane. The samples associated with this CCV were matrix spikes and samples linked to the matrix spikes were non-detects for the affected analytes; therefore, the data have been reported.

Method 8260B: Reanalysis of the following samples were performed outside of the analytical holding time for a full CCV1 compound list for matrix spikes : M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1 (140-17065-1[MS]), M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1 (140-17065-1[MSD]), M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2 (140-17065-2[MS]), M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2 (140-17065-2[MSD]), M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3 (140-17065-3[MS]), M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3 (140-17065-3[MSD]), (140-17065-A-17-B MS) and (140-17065-A-17-C MSD).

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

General Chemistry

Total Halogens in Air Samples: The samples were prepared for total fluorine, chlorine, bromine and/or iodine using SOP number KNOX-WC-0016 (based on ASTM Method E442 and SW-846 Method 5050). Samples derived from an air sampling train may consist of exposed filters, liquid impinger samples or liquid rinse samples from the sampling apparatus. Filters must be extracted in an appropriate solvent to provide a liquid extract for analysis. A portion of the liquid sample or extract (usually 1 mL) is oxidized by combustion in an oxygen flask at atmospheric pressure or a bomb containing oxygen under pressure. The liberated halogen compounds are absorbed primarily as halides in a sodium carbonate/sodium bicarbonate buffer solution. The combustion products are collected by repeated rinsing of the combustion apparatus, and analyzed by ion chromatography in accordance with SOP KNOX-WC-0005 (based on SW-846 Method 9056). The results are calculated using the following equation:

C = [(Ccom × Vsam× Vcom / V)/ 1 sample]

Where:
C = Concentration of analyte in the sample, ug/sample
Ccom = Concentration of analyte in the combustate, ug/mL
Vsam = Total volume of impinger sample or filter extract, mL
Vcom = Total volume of combustate, mL
V = Volume of sample combusted, mL

Anions in Impinger Solutions: Anions are is determined in accordance to SOP KNOX-WC-0005 (based on methods 300.0A and 9056). The samples were diluted a minimum of 1/20 in ion chromatography solvent buffer solution to reduce the methanol concentration before injection. Buffer concentrate was added until the pH was 10. Samples are diluted with ion chromatography eluate solution to bring the

Job ID: 140-17065-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

concentrations within the calibration range when necessary. Higher dilutions are applied as necessary.

An aliquot of prepared sample is introduced into the ion chromatograph. Anions are identified based on their retention times as compared to those of known standards. Quantification is accomplished by measuring the peak response and comparing it to a calibration curve generated from known standards.

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

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		69.5	9.18	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,1,3,3-Pentafluorobutane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,1-Trichloroethane	ND		69.5	10.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		139	27.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,1-Trifluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,2,2-Tetrachloroethane	ND		69.5	13.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		139	7.79	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,2-trichloro-1-fluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1,2-Trichloroethane	ND		69.5	7.23	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-Dichloro-1-fluoroethane	ND		139	69.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-dichloro-2,2-difluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-dichloro-2,2-difluoroethene	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-Dichloroethane	ND		69.5	8.34	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-Dichloroethene	ND		69.5	10.3	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-Dichloropropene	ND		69.5	7.51	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,1-Difluoroethene	ND		1390	1390	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2,2-trichloro-1,1-difluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2,3-Trichlorobenzene	ND		69.5	22.3	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2,3-Trichloropropane	ND		69.5	17.2	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2,4-Trichlorobenzene	ND		69.5	23.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2,4-Trimethylbenzene	ND		69.5	14.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-Dibromo-3-Chloropropane	ND		139	24.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-Dibromoethane (EDB)	ND		69.5	9.18	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-dichloro-1,1-difluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-Dichlorobenzene	ND		69.5	12.2	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-Dichloroethane	ND		69.5	11.7	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,2-Dichloropropane	ND		69.5	6.95	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,3,5-Trimethylbenzene	ND		69.5	14.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,3-Dichlorobenzene	ND		69.5	12.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,3-Dichloropropane	ND		69.5	7.79	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1,4-Dichlorobenzene	ND		69.5	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
1-Chloro-1,1-difluoroethane	ND		139	14.2	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2,2-Dichloropropane	ND		69.5	20.3	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2-Butanone (MEK)	ND		278	44.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		139	20.6	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2-Chloro-1,1,1-Trifluoroethane	ND		139	13.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2-Chlorotoluene	ND		69.5	13.1	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
2-Hexanone	ND		278	64.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Hexafluoropropylene oxide	ND		60.7	60.7	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
4-Chlorotoluene	ND		69.5	14.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
4-Isopropyltoluene	ND		69.5	18.6	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
4-Methyl-2-pentanone (MIBK)	ND		278	44.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Acetone	ND		278	164	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Benzene	ND		69.5	13.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Bromobenzene	ND		69.5	9.74	ug/Sample		10/23/19 10:43	10/24/19 19:58	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		69.5	15.6	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Bromodichloromethane	ND		69.5	12.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Bromoform	ND		69.5	21.1	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Bromomethane	ND	*	139	80.7	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Carbon disulfide	ND		69.5	17.2	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Carbon tetrachloride	ND		69.5	9.18	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Chlorobenzene	ND		69.5	10.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Chlorodibromomethane	ND		69.5	15.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Chloroethane	ND		139	30.6	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Chloroform	ND		69.5	8.07	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Chloromethane	ND		139	57.9	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
cis-1,2-Dichloroethene	ND		69.5	5.56	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
cis-1,3-Dichloropropene	ND		69.5	12.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Dibromomethane	ND		69.5	6.68	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Dichlorodifluoromethane	ND		139	24.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Ethylbenzene	ND		69.5	11.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		69.5	69.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Hexachlorobutadiene	ND		69.5	18.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		66.7	66.7	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Isopropylbenzene	ND		69.5	9.74	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
m,p-Xylene	ND		139	11.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Methylene Chloride	ND		69.5	44.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Naphthalene	ND		69.5	33.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
n-Butylbenzene	ND		69.5	17.8	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
n-Propylbenzene	ND		69.5	15.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
o-Xylene	ND		69.5	7.23	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
sec-Butylbenzene	ND		69.5	13.6	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Styrene	ND		69.5	15.0	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
tert-Butylbenzene	ND		69.5	12.2	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Tetrachloroethene	ND		69.5	9.18	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Toluene	ND		69.5	12.8	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
trans-1,2-Dichloroethene	ND		69.5	7.23	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
trans-1,3-Dichloropropene	ND		69.5	24.5	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Trichloroethene	ND		69.5	5.01	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Trichlorofluoromethane	ND	*	139	13.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Vinyl chloride	ND		139	33.4	ug/Sample		10/23/19 10:43	10/24/19 19:58	1
Carbonyl Difluoride	ND		204	204	ug/Sample		10/23/19 10:43	10/24/19 19:58	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:43*	*10/24/19 19:58*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:43*	*10/24/19 19:58*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*10/23/19 10:43*	*10/24/19 19:58*	*1*
Dibromofluoromethane (Surr)	*86*		*62 - 134*	*10/23/19 10:43*	*10/24/19 19:58*	*1*
Toluene-d8 (Surr)	*105*		*71 - 139*	*10/23/19 10:43*	*10/24/19 19:58*	*1*

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND	F2 F1	27800	13900	ug/Sample		10/23/19 10:43	11/13/19 00:29	1
Hydrogen Fluoride	ND		6120	2780	ug/Sample		10/23/19 10:43	11/12/19 19:41	20

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		54.4	7.18	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,1,3,3-Pentafluorobutane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,1-Trichloroethane	ND		54.4	7.83	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		109	21.5	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,1-Trifluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,2,2-Tetrachloroethane	ND		54.4	10.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		109	6.09	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,2-trichloro-1-fluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1,2-Trichloroethane	ND		54.4	5.66	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-Dichloro-1-fluoroethane	ND		109	54.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-dichloro-2,2-difluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-dichloro-2,2-difluoroethene	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-Dichloroethane	ND		54.4	6.53	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-Dichloroethene	ND		54.4	8.05	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-Dichloropropene	ND		54.4	5.87	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,1-Difluoroethene	ND		1090	1090	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2,2-trichloro-1,1-difluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2,3-Trichlorobenzene	ND		54.4	17.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2,3-Trichloropropane	ND		54.4	13.5	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2,4-Trichlorobenzene	ND		54.4	18.3	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2,4-Trimethylbenzene	ND		54.4	11.3	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-Dibromo-3-Chloropropane	ND		109	19.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-Dibromoethane (EDB)	ND		54.4	7.18	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-dichloro-1,1-difluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-Dichlorobenzene	ND		54.4	9.57	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-Dichloroethane	ND		54.4	9.14	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,2-Dichloropropane	ND		54.4	5.44	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,3,5-Trimethylbenzene	ND		54.4	11.3	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,3-Dichlorobenzene	ND		54.4	9.35	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,3-Dichloropropane	ND		54.4	6.09	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1,4-Dichlorobenzene	ND		54.4	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
1-Chloro-1,1-difluoroethane	ND		109	11.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2,2-Dichloropropane	ND		54.4	15.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2-Butanone (MEK)	ND		218	34.8	ug/Sample		10/23/19 10:43	10/24/19 20:23	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		109	16.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2-Chloro-1,1,1-Trifluoroethane	ND		109	10.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2-Chlorotoluene	ND		54.4	10.2	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
2-Hexanone	ND		218	50.0	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Hexafluoropropylene oxide	ND		47.5	47.5	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
4-Chlorotoluene	ND		54.4	11.3	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
4-Isopropyltoluene	ND		54.4	14.6	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
4-Methyl-2-pentanone (MIBK)	ND		218	34.8	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Acetone	ND		218	128	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Benzene	ND		54.4	10.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Bromobenzene	ND		54.4	7.61	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Bromochloromethane	ND		54.4	12.2	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Bromodichloromethane	ND		54.4	9.35	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Bromoform	ND		54.4	16.5	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Bromomethane	ND	*	109	63.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Carbon disulfide	ND		54.4	13.5	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Carbon tetrachloride	ND		54.4	7.18	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Chlorobenzene	ND		54.4	7.83	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Chlorodibromomethane	ND		54.4	11.7	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Chloroethane	ND		109	23.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Chloroform	ND		54.4	6.31	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Chloromethane	ND		109	45.2	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
cis-1,2-Dichloroethene	ND		54.4	4.35	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
cis-1,3-Dichloropropene	ND		54.4	9.35	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Dibromomethane	ND		54.4	5.22	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Dichlorodifluoromethane	ND		109	19.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Ethylbenzene	ND		54.4	8.92	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		54.4	54.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Hexachlorobutadiene	ND		54.4	14.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		52.2	52.2	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Isopropylbenzene	ND		54.4	7.61	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
m,p-Xylene	ND		109	8.92	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Methylene Chloride	ND		54.4	34.8	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Naphthalene	ND		54.4	26.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
n-Butylbenzene	ND		54.4	13.9	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
n-Propylbenzene	ND		54.4	11.7	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
o-Xylene	ND		54.4	5.66	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
sec-Butylbenzene	ND		54.4	10.7	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Styrene	ND		54.4	11.7	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
tert-Butylbenzene	ND		54.4	9.57	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Tetrachloroethene	ND		54.4	7.18	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Toluene	ND		54.4	10.0	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
trans-1,2-Dichloroethene	ND		54.4	5.66	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
trans-1,3-Dichloropropene	ND		54.4	19.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Trichloroethene	ND		54.4	3.92	ug/Sample		10/23/19 10:43	10/24/19 20:23	1

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	109	10.4	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Vinyl chloride	ND		109	26.1	ug/Sample		10/23/19 10:43	10/24/19 20:23	1
Carbonyl Difluoride	ND		160	160	ug/Sample		10/23/19 10:43	10/24/19 20:23	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:43*	*10/24/19 20:23*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:43*	*10/24/19 20:23*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:43*	*10/24/19 20:23*	*1*
Dibromofluoromethane (Surr)	*87*		*62 - 134*	*10/23/19 10:43*	*10/24/19 20:23*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:43*	*10/24/19 20:23*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		21800	10900	ug/Sample		10/23/19 10:43	11/13/19 01:31	1
Hydrogen Fluoride	ND		4790	2180	ug/Sample		10/23/19 10:43	11/12/19 20:37	20

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		36.6	4.83	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,1,3,3-Pentafluorobutane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,1-Trichloroethane	ND		36.6	5.27	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		73.2	14.5	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,1-Trifluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,2,2-Tetrachloroethane	ND		36.6	7.03	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		73.2	4.10	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,2-trichloro-1-fluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1,2-Trichloroethane	ND		36.6	3.81	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-Dichloro-1-fluoroethane	ND		73.2	36.6	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-dichloro-2,2-difluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-dichloro-2,2-difluoroethene	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-Dichloroethane	ND		36.6	4.39	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-Dichloroethene	ND		36.6	5.42	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-Dichloropropene	ND		36.6	3.95	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,1-Difluoroethene	ND		732	732	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2,2-trichloro-1,1-difluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2,3-Trichlorobenzene	ND		36.6	11.7	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2,3-Trichloropropane	ND		36.6	9.08	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2,4-Trichlorobenzene	ND		36.6	12.3	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2,4-Trimethylbenzene	ND		36.6	7.62	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2-Dibromo-3-Chloropropane	ND		73.2	12.9	ug/Sample		10/23/19 10:43	10/24/19 20:47	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		36.6	4.83	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2-dichloro-1,1-difluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2-Dichlorobenzene	ND		36.6	6.45	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2-Dichloroethane	ND		36.6	6.15	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,2-Dichloropropane	ND		36.6	3.66	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,3,5-Trimethylbenzene	ND		36.6	7.62	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,3-Dichlorobenzene	ND		36.6	6.30	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,3-Dichloropropane	ND		36.6	4.10	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1,4-Dichlorobenzene	ND		36.6	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
1-Chloro-1,1-difluoroethane	ND		73.2	7.47	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2,2-Dichloropropane	ND		36.6	10.7	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2-Butanone (MEK)	ND		146	23.4	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		73.2	10.8	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2-Chloro-1,1,1-Trifluoroethane	ND		73.2	7.32	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2-Chlorotoluene	ND		36.6	6.88	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
2-Hexanone	ND		146	33.7	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Hexafluoropropylene oxide	ND		32.0	32.0	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
4-Chlorotoluene	ND		36.6	7.62	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
4-Isopropyltoluene	ND		36.6	9.81	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
4-Methyl-2-pentanone (MIBK)	ND		146	23.4	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Acetone	ND		146	86.4	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Benzene	ND		36.6	7.03	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Bromobenzene	ND		36.6	5.13	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Bromochloromethane	ND		36.6	8.20	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Bromodichloromethane	ND		36.6	6.30	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Bromoform	ND		36.6	11.1	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Bromomethane	ND	*	73.2	42.5	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Carbon disulfide	ND		36.6	9.08	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Carbon tetrachloride	ND		36.6	4.83	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Chlorobenzene	ND		36.6	5.27	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Chlorodibromomethane	ND		36.6	7.91	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Chloroethane	ND		73.2	16.1	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Chloroform	ND		36.6	4.25	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Chloromethane	ND		73.2	30.5	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
cis-1,2-Dichloroethene	ND		36.6	2.93	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
cis-1,3-Dichloropropene	ND		36.6	6.30	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Dibromomethane	ND		36.6	3.52	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Dichlorodifluoromethane	ND		73.2	12.9	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Ethylbenzene	ND		36.6	6.01	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		36.6	36.6	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Hexachlorobutadiene	ND		36.6	9.67	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		35.1	35.1	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Isopropylbenzene	ND		36.6	5.13	ug/Sample		10/23/19 10:43	10/24/19 20:47	1

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		73.2	6.01	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Methylene Chloride	ND		36.6	23.4	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Naphthalene	ND		36.6	17.6	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
n-Butylbenzene	ND		36.6	9.37	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
n-Propylbenzene	ND		36.6	7.91	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
o-Xylene	ND		36.6	3.81	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
sec-Butylbenzene	ND		36.6	7.18	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Styrene	ND		36.6	7.91	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
tert-Butylbenzene	ND		36.6	6.45	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Tetrachloroethene	ND		36.6	4.83	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Toluene	ND		36.6	6.74	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
trans-1,2-Dichloroethene	ND		36.6	3.81	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
trans-1,3-Dichloropropene	ND		36.6	12.9	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Trichloroethene	ND		36.6	2.64	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Trichlorofluoromethane	ND	*	73.2	7.03	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Vinyl chloride	ND		73.2	17.6	ug/Sample		10/23/19 10:43	10/24/19 20:47	1
Carbonyl Difluoride	ND		107	107	ug/Sample		10/23/19 10:43	10/24/19 20:47	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*38.9*	*T J*	*ug/Sample*		*1.92*		*10/23/19 10:43*	*10/24/19 20:47*	*1*
Unknown	*38.6*	*T J*	*ug/Sample*		*2.01*		*10/23/19 10:43*	*10/24/19 20:47*	*1*
Oxalyl chloride	*39.6*	*T J N*	*ug/Sample*		*2.04*	*79-37-8*	*10/23/19 10:43*	*10/24/19 20:47*	*1*
Unknown	*39.1*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:43*	*10/24/19 20:47*	*1*
Cyclohexane	*74.6*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 20:47*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:43*	*10/24/19 20:47*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:43*	*10/24/19 20:47*	*1*
Dibromofluoromethane (Surr)	*86*		*62 - 134*	*10/23/19 10:43*	*10/24/19 20:47*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/24/19 20:47*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		15200	7580	ug/Sample		10/23/19 10:43	11/13/19 02:33	1
Hydrogen Fluoride	ND		3220	1460	ug/Sample		10/23/19 10:43	11/12/19 20:58	20

Client Sample ID: M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-4

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		33.6	4.44	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,1,3,3-Pentafluorobutane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,1-Trichloroethane	ND		33.6	4.84	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		67.3	13.3	ug/Sample		10/23/19 10:43	10/24/19 21:12	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-4

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,2,2-Tetrachloroethane	ND		33.6	6.46	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		67.3	3.77	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,2-trichloro-1-fluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1,2-Trichloroethane	ND		33.6	3.50	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-Dichloro-1-fluoroethane	ND		67.3	33.6	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-dichloro-2,2-difluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-dichloro-2,2-difluoroethene	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-Dichloroethane	ND		33.6	4.04	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-Dichloroethene	ND		33.6	4.98	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-Dichloropropene	ND		33.6	3.63	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,1-Difluoroethene	ND		673	673	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2,2-trichloro-1,1-difluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2,3-Trichlorobenzene	ND		33.6	10.8	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2,3-Trichloropropane	ND		33.6	8.34	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2,4-Trichlorobenzene	ND		33.6	11.3	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2,4-Trimethylbenzene	ND		33.6	7.00	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-Dibromo-3-Chloropropane	ND		67.3	11.8	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-Dibromoethane (EDB)	ND		33.6	4.44	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-dichloro-1,1-difluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-Dichlorobenzene	ND		33.6	5.92	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-Dichloroethane	ND		33.6	5.65	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,2-Dichloropropane	ND		33.6	3.36	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,3,5-Trimethylbenzene	ND		33.6	7.00	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,3-Dichlorobenzene	ND		33.6	5.78	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,3-Dichloropropane	ND		33.6	3.77	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1,4-Dichlorobenzene	ND		33.6	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
1-Chloro-1,1-difluoroethane	ND		67.3	6.86	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2,2-Dichloropropane	ND		33.6	9.82	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2-Butanone (MEK)	ND		135	21.5	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		67.3	9.96	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2-Chloro-1,1,1-Trifluoroethane	ND		67.3	6.73	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2-Chlorotoluene	ND		33.6	6.32	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
2-Hexanone	ND		135	30.9	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Hexafluoropropylene oxide	ND		29.3	29.3	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
4-Chlorotoluene	ND		33.6	7.00	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
4-Isopropyltoluene	ND		33.6	9.01	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
4-Methyl-2-pentanone (MIBK)	ND		135	21.5	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Acetone	ND		135	79.4	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Benzene	ND		33.6	6.46	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Bromobenzene	ND		33.6	4.71	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Bromochloromethane	ND		33.6	7.53	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Bromodichloromethane	ND		33.6	5.78	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Bromoform	ND		33.6	10.2	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Bromomethane	ND	*	67.3	39.0	ug/Sample		10/23/19 10:43	10/24/19 21:12	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-4

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	ND		33.6	8.34	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Carbon tetrachloride	ND		33.6	4.44	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Chlorobenzene	ND		33.6	4.84	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Chlorodibromomethane	ND		33.6	7.26	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Chloroethane	ND		67.3	14.8	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Chloroform	ND		33.6	3.90	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Chloromethane	ND		67.3	28.0	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
cis-1,2-Dichloroethene	ND		33.6	2.69	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
cis-1,3-Dichloropropene	ND		33.6	5.78	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Dibromomethane	ND		33.6	3.23	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Dichlorodifluoromethane	ND		67.3	11.8	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Ethylbenzene	ND		33.6	5.52	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		33.6	33.6	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Hexachlorobutadiene	ND		33.6	8.88	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		32.2	32.2	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Isopropylbenzene	ND		33.6	4.71	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
m,p-Xylene	ND		67.3	5.52	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Methylene Chloride	ND		33.6	21.5	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Naphthalene	ND		33.6	16.1	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
n-Butylbenzene	ND		33.6	8.61	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
n-Propylbenzene	ND		33.6	7.26	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
o-Xylene	ND		33.6	3.50	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
sec-Butylbenzene	ND		33.6	6.59	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Styrene	ND		33.6	7.26	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
tert-Butylbenzene	ND		33.6	5.92	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Tetrachloroethene	ND		33.6	4.44	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Toluene	ND		33.6	6.19	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
trans-1,2-Dichloroethene	ND		33.6	3.50	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
trans-1,3-Dichloropropene	ND		33.6	11.8	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Trichloroethene	ND		33.6	2.42	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Trichlorofluoromethane	ND	*	67.3	6.46	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Vinyl chloride	ND		67.3	16.1	ug/Sample		10/23/19 10:43	10/24/19 21:12	1
Carbonyl Difluoride	ND		98.9	98.9	ug/Sample		10/23/19 10:43	10/24/19 21:12	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*33.8*	*T J*	*ug/Sample*		*2.08*		*10/23/19 10:43*	*10/24/19 21:12*	*1*
Cyclohexane	*65.2*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 21:12*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:43*	*10/24/19 21:12*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*10/23/19 10:43*	*10/24/19 21:12*	*1*
Dibromofluoromethane (Surr)	*87*		*62 - 134*	*10/23/19 10:43*	*10/24/19 21:12*	*1*
Toluene-d8 (Surr)	*105*		*71 - 139*	*10/23/19 10:43*	*10/24/19 21:12*	*1*

Client Sample ID: M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-4

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		13500	6730	ug/Sample		10/23/19 10:43	11/13/19 12:58	1
Hydrogen Fluoride	ND		2960	1350	ug/Sample		10/23/19 10:43	11/12/19 21:19	20

Client Sample ID: M-2968 R1 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-5

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		29.9	3.95	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,1,3,3-Pentafluorobutane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,1-Trichloroethane	ND		29.9	4.31	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		59.9	11.9	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,1-Trifluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,2,2-Tetrachloroethane	ND		29.9	5.75	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		59.9	3.35	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,2-trichloro-1-fluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1,2-Trichloroethane	ND		29.9	3.11	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-Dichloro-1-fluoroethane	ND		59.9	29.9	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-dichloro-2,2-difluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-dichloro-2,2-difluoroethene	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-Dichloroethane	ND		29.9	3.59	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-Dichloroethene	ND		29.9	4.43	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-Dichloropropene	ND		29.9	3.23	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,1-Difluoroethene	ND		599	599	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2,2-trichloro-1,1-difluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2,3-Trichlorobenzene	ND		29.9	9.58	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2,3-Trichloropropane	ND		29.9	7.43	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2,4-Trichlorobenzene	ND		29.9	10.1	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2,4-Trimethylbenzene	ND		29.9	6.23	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-Dibromo-3-Chloropropane	ND		59.9	10.5	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-Dibromoethane (EDB)	ND		29.9	3.95	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-dichloro-1,1-difluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-Dichlorobenzene	ND		29.9	5.27	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-Dichloroethane	ND		29.9	5.03	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,2-Dichloropropane	ND		29.9	2.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,3,5-Trimethylbenzene	ND		29.9	6.23	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,3-Dichlorobenzene	ND		29.9	5.15	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,3-Dichloropropane	ND		29.9	3.35	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1,4-Dichlorobenzene	ND		29.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
1-Chloro-1,1-difluoroethane	ND		59.9	6.11	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2,2-Dichloropropane	ND		29.9	8.74	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2-Butanone (MEK)	ND		120	19.2	ug/Sample		10/23/19 10:43	10/24/19 21:36	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2968 R1 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-5

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		59.9	8.86	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2-Chloro-1,1,1-Trifluoroethane	ND		59.9	5.99	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2-Chlorotoluene	ND		29.9	5.63	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
2-Hexanone	ND		120	27.5	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Hexafluoropropylene oxide	ND		26.1	26.1	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
4-Chlorotoluene	ND		29.9	6.23	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
4-Isopropyltoluene	ND		29.9	8.02	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
4-Methyl-2-pentanone (MIBK)	ND		120	19.2	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Acetone	ND		120	70.7	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Benzene	ND		29.9	5.75	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Bromobenzene	ND		29.9	4.19	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Bromochloromethane	ND		29.9	6.71	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Bromodichloromethane	ND		29.9	5.15	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Bromoform	ND		29.9	9.10	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Bromomethane	ND	*	59.9	34.7	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Carbon disulfide	ND		29.9	7.43	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Carbon tetrachloride	ND		29.9	3.95	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Chlorobenzene	ND		29.9	4.31	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Chlorodibromomethane	ND		29.9	6.47	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Chloroethane	ND		59.9	13.2	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Chloroform	ND		29.9	3.47	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Chloromethane	ND		59.9	24.9	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
cis-1,2-Dichloroethene	ND		29.9	2.40	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
cis-1,3-Dichloropropene	ND		29.9	5.15	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Dibromomethane	ND		29.9	2.87	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Dichlorodifluoromethane	ND		59.9	10.5	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Ethylbenzene	ND		29.9	4.91	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		29.9	29.9	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Hexachlorobutadiene	ND		29.9	7.90	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		28.7	28.7	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Isopropylbenzene	ND		29.9	4.19	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
m,p-Xylene	ND		59.9	4.91	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Methylene Chloride	ND		29.9	19.2	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Naphthalene	ND		29.9	14.4	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
n-Butylbenzene	ND		29.9	7.67	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
n-Propylbenzene	ND		29.9	6.47	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
o-Xylene	ND		29.9	3.11	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
sec-Butylbenzene	ND		29.9	5.87	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Styrene	ND		29.9	6.47	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
tert-Butylbenzene	ND		29.9	5.27	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Tetrachloroethene	ND		29.9	3.95	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Toluene	ND		29.9	5.51	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
trans-1,2-Dichloroethene	ND		29.9	3.11	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
trans-1,3-Dichloropropene	ND		29.9	10.5	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Trichloroethene	ND		29.9	2.16	ug/Sample		10/23/19 10:43	10/24/19 21:36	1

Client Sample ID: M-2968 R1 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-5

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	59.9	5.75	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Vinyl chloride	ND		59.9	14.4	ug/Sample		10/23/19 10:43	10/24/19 21:36	1
Carbonyl Difluoride	ND		87.9	87.9	ug/Sample		10/23/19 10:43	10/24/19 21:36	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*32.5*	*T J*	*ug/Sample*		*2.06*		*10/23/19 10:43*	*10/24/19 21:36*	*1*
Cyclohexane	*65.4*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 21:36*	*1*
5-Methylsalicylic acid, 2TMS derivative	*31.0*	*T J N*	*ug/Sample*		*8.91*	*1000153-59-4*	*10/23/19 10:43*	*10/24/19 21:36*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:43*	*10/24/19 21:36*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:43*	*10/24/19 21:36*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:43*	*10/24/19 21:36*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:43*	*10/24/19 21:36*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**6210**	**J**	12000	5990	ug/Sample		10/23/19 10:43	11/13/19 04:21	1
Hydrogen Fluoride	ND		2630	1200	ug/Sample		10/23/19 10:43	11/12/19 21:39	20

Client Sample ID: M-2969 R1 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-6

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		33.2	4.38	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,1,3,3-Pentafluorobutane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,1-Trichloroethane	ND		33.2	4.77	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		66.3	13.1	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,1-Trifluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,2,2-Tetrachloroethane	ND		33.2	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		66.3	3.71	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,2-trichloro-1-fluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1,2-Trichloroethane	ND		33.2	3.45	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-Dichloro-1-fluoroethane	ND		66.3	33.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-dichloro-2,2-difluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-dichloro-2,2-difluoroethene	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-Dichloroethane	ND		33.2	3.98	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-Dichloroethene	ND		33.2	4.91	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-Dichloropropene	ND		33.2	3.58	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,1-Difluoroethene	ND		663	663	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2,2-trichloro-1,1-difluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2,3-Trichlorobenzene	ND		33.2	10.6	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2,3-Trichloropropane	ND		33.2	8.22	ug/Sample		10/23/19 10:43	10/24/19 22:01	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2969 R1 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-6

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		33.2	11.1	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2,4-Trimethylbenzene	ND		33.2	6.90	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-Dibromo-3-Chloropropane	ND		66.3	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-Dibromoethane (EDB)	ND		33.2	4.38	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-dichloro-1,1-difluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-Dichlorobenzene	ND		33.2	5.83	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-Dichloroethane	ND		33.2	5.57	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,2-Dichloropropane	ND		33.2	3.32	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,3,5-Trimethylbenzene	ND		33.2	6.90	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,3-Dichlorobenzene	ND		33.2	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,3-Dichloropropane	ND		33.2	3.71	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1,4-Dichlorobenzene	ND		33.2	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
1-Chloro-1,1-difluoroethane	ND		66.3	6.76	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2,2-Dichloropropane	ND		33.2	9.68	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2-Butanone (MEK)	ND		133	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		66.3	9.81	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2-Chloro-1,1,1-Trifluoroethane	ND		66.3	6.63	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2-Chlorotoluene	ND		33.2	6.23	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
2-Hexanone	ND		133	30.5	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Hexafluoropropylene oxide	ND		29.0	29.0	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
4-Chlorotoluene	ND		33.2	6.90	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
4-Isopropyltoluene	ND		33.2	8.88	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
4-Methyl-2-pentanone (MIBK)	ND		133	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Acetone	ND		133	78.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Benzene	ND		33.2	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Bromobenzene	ND		33.2	4.64	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Bromochloromethane	ND		33.2	7.43	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Bromodichloromethane	ND		33.2	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Bromoform	ND		33.2	10.1	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Bromomethane	ND	*	66.3	38.5	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Carbon disulfide	ND		33.2	8.22	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Carbon tetrachloride	ND		33.2	4.38	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Chlorobenzene	ND		33.2	4.77	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Chlorodibromomethane	ND		33.2	7.16	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Chloroethane	ND		66.3	14.6	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Chloroform	ND		33.2	3.85	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Chloromethane	ND		66.3	27.6	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
cis-1,2-Dichloroethene	ND		33.2	2.65	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
cis-1,3-Dichloropropene	ND		33.2	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Dibromomethane	ND		33.2	3.18	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Dichlorodifluoromethane	ND		66.3	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Ethylbenzene	ND		33.2	5.44	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		33.2	33.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Hexachlorobutadiene	ND		33.2	8.75	ug/Sample		10/23/19 10:43	10/24/19 22:01	1

Client Sample ID: M-2969 R1 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-6

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		31.8	31.8	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Isopropylbenzene	ND		33.2	4.64	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
m,p-Xylene	ND		66.3	5.44	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Methylene Chloride	ND		33.2	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Naphthalene	ND		33.2	15.9	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
n-Butylbenzene	ND		33.2	8.49	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
n-Propylbenzene	ND		33.2	7.16	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
o-Xylene	ND		33.2	3.45	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
sec-Butylbenzene	ND		33.2	6.50	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Styrene	ND		33.2	7.16	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
tert-Butylbenzene	ND		33.2	5.83	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Tetrachloroethene	ND		33.2	4.38	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Toluene	ND		33.2	6.10	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
trans-1,2-Dichloroethene	ND		33.2	3.45	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
trans-1,3-Dichloropropene	ND		33.2	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Trichloroethene	ND		33.2	2.39	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Trichlorofluoromethane	ND	*	66.3	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Vinyl chloride	ND		66.3	15.9	ug/Sample		10/23/19 10:43	10/24/19 22:01	1
Carbonyl Difluoride	ND		97.5	97.5	ug/Sample		10/23/19 10:43	10/24/19 22:01	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*69.4*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 22:01*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:43*	*10/24/19 22:01*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:43*	*10/24/19 22:01*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:43*	*10/24/19 22:01*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/24/19 22:01*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		13300	6630	ug/Sample		10/23/19 10:43	11/13/19 04:41	1
Hydrogen Fluoride	ND		2920	1330	ug/Sample		10/23/19 10:43	11/12/19 22:00	20

Client Sample ID: M-2970 R1 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-7

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		33.1	4.37	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,1,3,3-Pentafluorobutane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,1-Trichloroethane	ND		33.1	4.77	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		66.2	13.1	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,1-Trifluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2970 R1 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-7

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		33.1	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		66.2	3.71	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,2-trichloro-1-fluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1,2-Trichloroethane	ND		33.1	3.44	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-Dichloro-1-fluoroethane	ND		66.2	33.1	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-dichloro-2,2-difluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-dichloro-2,2-difluoroethene	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-Dichloroethane	ND		33.1	3.97	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-Dichloroethene	ND		33.1	4.90	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-Dichloropropene	ND		33.1	3.58	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,1-Difluoroethene	ND		662	662	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2,2-trichloro-1,1-difluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2,3-Trichlorobenzene	ND		33.1	10.6	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2,3-Trichloropropane	ND		33.1	8.21	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2,4-Trichlorobenzene	ND		33.1	11.1	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2,4-Trimethylbenzene	ND		33.1	6.89	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-Dibromo-3-Chloropropane	ND		66.2	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-Dibromoethane (EDB)	ND		33.1	4.37	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-dichloro-1,1-difluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-Dichlorobenzene	ND		33.1	5.83	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-Dichloroethane	ND		33.1	5.56	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,2-Dichloropropane	ND		33.1	3.31	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,3,5-Trimethylbenzene	ND		33.1	6.89	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,3-Dichlorobenzene	ND		33.1	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,3-Dichloropropane	ND		33.1	3.71	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1,4-Dichlorobenzene	ND		33.1	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
1-Chloro-1,1-difluoroethane	ND		66.2	6.76	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2,2-Dichloropropane	ND		33.1	9.67	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2-Butanone (MEK)	ND		132	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		66.2	9.80	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2-Chloro-1,1,1-Trifluoroethane	ND		66.2	6.62	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2-Chlorotoluene	ND		33.1	6.23	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
2-Hexanone	ND		132	30.5	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Hexafluoropropylene oxide	ND		28.9	28.9	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
4-Chlorotoluene	ND		33.1	6.89	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
4-Isopropyltoluene	ND		33.1	8.87	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
4-Methyl-2-pentanone (MIBK)	ND		132	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Acetone	ND		132	78.2	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Benzene	ND		33.1	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Bromobenzene	ND		33.1	4.64	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Bromochloromethane	ND		33.1	7.42	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Bromodichloromethane	ND		33.1	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Bromoform	ND		33.1	10.1	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Bromomethane	ND	*	66.2	38.4	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Carbon disulfide	ND		33.1	8.21	ug/Sample		10/23/19 10:43	10/24/19 22:25	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2970 R1 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-7

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		33.1	4.37	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Chlorobenzene	ND		33.1	4.77	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Chlorodibromomethane	ND		33.1	7.15	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Chloroethane	ND		66.2	14.6	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Chloroform	ND		33.1	3.84	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Chloromethane	ND		66.2	27.6	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
cis-1,2-Dichloroethene	ND		33.1	2.65	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
cis-1,3-Dichloropropene	ND		33.1	5.70	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Dibromomethane	ND		33.1	3.18	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Dichlorodifluoromethane	ND		66.2	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Ethylbenzene	ND		33.1	5.43	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		33.1	33.1	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Hexachlorobutadiene	ND		33.1	8.74	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		31.8	31.8	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Isopropylbenzene	ND		33.1	4.64	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
m,p-Xylene	ND		66.2	5.43	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Methylene Chloride	ND		33.1	21.2	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Naphthalene	ND		33.1	15.9	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
n-Butylbenzene	ND		33.1	8.48	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
n-Propylbenzene	ND		33.1	7.15	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
o-Xylene	ND		33.1	3.44	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
sec-Butylbenzene	ND		33.1	6.49	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Styrene	ND		33.1	7.15	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
tert-Butylbenzene	ND		33.1	5.83	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Tetrachloroethene	ND		33.1	4.37	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Toluene	ND		33.1	6.09	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
trans-1,2-Dichloroethene	ND		33.1	3.44	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
trans-1,3-Dichloropropene	ND		33.1	11.7	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Trichloroethene	ND		33.1	2.38	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Trichlorofluoromethane	ND	*	66.2	6.36	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Vinyl chloride	ND		66.2	15.9	ug/Sample		10/23/19 10:43	10/24/19 22:25	1
Carbonyl Difluoride	ND		96.7	96.7	ug/Sample		10/23/19 10:43	10/24/19 22:25	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*58.9*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 22:25*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:43*	*10/24/19 22:25*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:43*	*10/24/19 22:25*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:43*	*10/24/19 22:25*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:43*	*10/24/19 22:25*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**9600**	**J**	13200	6620	ug/Sample		10/23/19 10:43	11/13/19 05:02	1
Hydrogen Fluoride	ND		2910	1320	ug/Sample		10/23/19 10:43	11/13/19 05:44	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2971 R1 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-8

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		20.6	2.72	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,1,3,3-Pentafluorobutane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,1-Trichloroethane	ND		20.6	2.97	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		41.3	8.17	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,1-Trifluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,2,2-Tetrachloroethane	ND		20.6	3.96	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		41.3	2.31	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,2-trichloro-1-fluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1,2-Trichloroethane	ND		20.6	2.15	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-Dichloro-1-fluoroethane	ND		41.3	20.6	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-dichloro-2,2-difluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-dichloro-2,2-difluoroethene	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-Dichloroethane	ND		20.6	2.48	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-Dichloroethene	ND		20.6	3.05	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-Dichloropropene	ND		20.6	2.23	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,1-Difluoroethene	ND		413	413	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2,2-trichloro-1,1-difluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2,3-Trichlorobenzene	ND		20.6	6.60	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2,3-Trichloropropane	ND		20.6	5.12	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2,4-Trichlorobenzene	ND		20.6	6.93	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2,4-Trimethylbenzene	ND		20.6	4.29	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-Dibromo-3-Chloropropane	ND		41.3	7.26	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-Dibromoethane (EDB)	ND		20.6	2.72	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-dichloro-1,1-difluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-Dichlorobenzene	ND		20.6	3.63	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-Dichloroethane	ND		20.6	3.47	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,2-Dichloropropane	ND		20.6	2.06	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,3,5-Trimethylbenzene	ND		20.6	4.29	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,3-Dichlorobenzene	ND		20.6	3.55	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,3-Dichloropropane	ND		20.6	2.31	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1,4-Dichlorobenzene	ND		20.6	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
1-Chloro-1,1-difluoroethane	ND		41.3	4.21	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2,2-Dichloropropane	ND		20.6	6.02	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2-Butanone (MEK)	ND		82.5	13.2	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		41.3	6.11	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2-Chloro-1,1,1-Trifluoroethane	ND		41.3	4.13	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2-Chlorotoluene	ND		20.6	3.88	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
2-Hexanone	ND		82.5	19.0	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Hexafluoropropylene oxide	ND		18.0	18.0	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
4-Chlorotoluene	ND		20.6	4.29	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
4-Isopropyltoluene	ND		20.6	5.53	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
4-Methyl-2-pentanone (MIBK)	ND		82.5	13.2	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Acetone	ND		82.5	48.7	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Benzene	ND		20.6	3.96	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Bromobenzene	ND		20.6	2.89	ug/Sample		10/23/19 10:43	10/24/19 22:50	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2971 R1 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-8

Date Collected: 10/14/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		20.6	4.62	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Bromodichloromethane	ND		20.6	3.55	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Bromoform	ND		20.6	6.27	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Bromomethane	ND	*	41.3	23.9	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Carbon disulfide	ND		20.6	5.12	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Carbon tetrachloride	ND		20.6	2.72	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Chlorobenzene	ND		20.6	2.97	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Chlorodibromomethane	ND		20.6	4.46	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Chloroethane	ND		41.3	9.08	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Chloroform	ND		20.6	2.39	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Chloromethane	ND		41.3	17.2	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
cis-1,2-Dichloroethene	ND		20.6	1.65	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
cis-1,3-Dichloropropene	ND		20.6	3.55	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Dibromomethane	ND		20.6	1.98	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Dichlorodifluoromethane	ND		41.3	7.26	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Ethylbenzene	ND		20.6	3.38	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		20.6	20.6	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Hexachlorobutadiene	ND		20.6	5.45	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		19.8	19.8	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Isopropylbenzene	ND		20.6	2.89	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
m,p-Xylene	ND		41.3	3.38	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Methylene Chloride	ND		20.6	13.2	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Naphthalene	ND		20.6	9.90	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
n-Butylbenzene	ND		20.6	5.28	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
n-Propylbenzene	ND		20.6	4.46	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
o-Xylene	ND		20.6	2.15	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
sec-Butylbenzene	ND		20.6	4.04	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Styrene	ND		20.6	4.46	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
tert-Butylbenzene	ND		20.6	3.63	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Tetrachloroethene	ND		20.6	2.72	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Toluene	ND		20.6	3.80	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
trans-1,2-Dichloroethene	ND		20.6	2.15	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
trans-1,3-Dichloropropene	ND		20.6	7.26	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Trichloroethene	ND		20.6	1.49	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Trichlorofluoromethane	ND	*	41.3	3.96	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Vinyl chloride	ND		41.3	9.90	ug/Sample		10/23/19 10:43	10/24/19 22:50	1
Carbonyl Difluoride	ND		60.5	60.5	ug/Sample		10/23/19 10:43	10/24/19 22:50	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Phosphoric acid, 1,2-ethanediyl tetrakis(2-chloroethyl) este	*22.2*	*T J N*	*ug/Sample*		*2.07*	*33125-86-9*	*10/23/19 10:43*	*10/24/19 22:50*	*1*
Cyclohexane	*48.4*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/24/19 22:50*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:43*	*10/24/19 22:50*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:43*	*10/24/19 22:50*	*1*

Client Sample ID: M-2971 R1 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-8

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:43*	*10/24/19 22:50*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/24/19 22:50*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**8090**	**J**	8250	4130	ug/Sample		10/23/19 10:43	11/13/19 05:23	1
Hydrogen Fluoride	ND		1820	825	ug/Sample		10/23/19 10:43	11/13/19 06:04	20

Client Sample ID: M-2972 R2 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-9

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		58.2	7.68	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,1,3,3-Pentafluorobutane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,1-Trichloroethane	ND		58.2	8.38	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		116	23.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,1-Trifluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,2,2-Tetrachloroethane	ND		58.2	11.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		116	6.51	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,2-trichloro-1-fluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1,2-Trichloroethane	ND		58.2	6.05	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-Dichloro-1-fluoroethane	ND		116	58.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-dichloro-2,2-difluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-dichloro-2,2-difluoroethene	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-Dichloroethane	ND		58.2	6.98	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-Dichloroethene	ND		58.2	8.61	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-Dichloropropene	ND		58.2	6.28	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,1-Difluoroethene	ND		1160	1160	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2,2-trichloro-1,1-difluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2,3-Trichlorobenzene	ND		58.2	18.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2,3-Trichloropropane	ND		58.2	14.4	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2,4-Trichlorobenzene	ND		58.2	19.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2,4-Trimethylbenzene	ND		58.2	12.1	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-Dibromo-3-Chloropropane	ND		116	20.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-Dibromoethane (EDB)	ND		58.2	7.68	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-dichloro-1,1-difluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-Dichlorobenzene	ND		58.2	10.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-Dichloroethane	ND		58.2	9.77	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,2-Dichloropropane	ND		58.2	5.82	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,3,5-Trimethylbenzene	ND		58.2	12.1	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,3-Dichlorobenzene	ND		58.2	10.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,3-Dichloropropane	ND		58.2	6.51	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
1,4-Dichlorobenzene	ND		58.2	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1

Client Sample ID: M-2972 R2 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-9

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Chloro-1,1-difluoroethane	ND		116	11.9	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2,2-Dichloropropane	ND		58.2	17.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2-Butanone (MEK)	ND		233	37.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		116	17.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2-Chloro-1,1,1-Trifluoroethane	ND		116	11.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2-Chlorotoluene	ND		58.2	10.9	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
2-Hexanone	ND		233	53.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Hexafluoropropylene oxide	ND		50.8	50.8	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
4-Chlorotoluene	ND		58.2	12.1	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
4-Isopropyltoluene	ND		58.2	15.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
4-Methyl-2-pentanone (MIBK)	ND		233	37.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Acetone	ND		233	137	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Benzene	ND		58.2	11.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Bromobenzene	ND		58.2	8.14	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Bromochloromethane	ND		58.2	13.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Bromodichloromethane	ND		58.2	10.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Bromoform	ND		58.2	17.7	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Bromomethane	ND	*	116	67.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Carbon disulfide	ND		58.2	14.4	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Carbon tetrachloride	ND		58.2	7.68	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Chlorobenzene	ND		58.2	8.38	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Chlorodibromomethane	ND		58.2	12.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Chloroethane	ND		116	25.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Chloroform	ND		58.2	6.75	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Chloromethane	ND		116	48.4	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
cis-1,2-Dichloroethene	ND		58.2	4.65	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
cis-1,3-Dichloropropene	ND		58.2	10.0	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Dibromomethane	ND		58.2	5.58	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Dichlorodifluoromethane	ND		116	20.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Ethylbenzene	ND		58.2	9.54	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		58.2	58.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Hexachlorobutadiene	ND		58.2	15.4	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		55.8	55.8	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Isopropylbenzene	ND		58.2	8.14	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
m,p-Xylene	ND		116	9.54	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Methylene Chloride	ND		58.2	37.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Naphthalene	ND		58.2	27.9	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
n-Butylbenzene	ND		58.2	14.9	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
n-Propylbenzene	ND		58.2	12.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
o-Xylene	ND		58.2	6.05	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
sec-Butylbenzene	ND		58.2	11.4	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Styrene	ND		58.2	12.6	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
tert-Butylbenzene	ND		58.2	10.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1

Client Sample ID: M-2972 R2 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-9

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		58.2	7.68	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Toluene	ND		58.2	10.7	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
trans-1,2-Dichloroethene	ND		58.2	6.05	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
trans-1,3-Dichloropropene	ND		58.2	20.5	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Trichloroethene	ND		58.2	4.19	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Trichlorofluoromethane	ND	*	116	11.2	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Vinyl chloride	ND		116	27.9	ug/Sample		10/23/19 10:43	10/24/19 23:14	1
Carbonyl Difluoride	ND		171	171	ug/Sample		10/23/19 10:43	10/24/19 23:14	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:43*	*10/24/19 23:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:43*	*10/24/19 23:14*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:43*	*10/24/19 23:14*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:43*	*10/24/19 23:14*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/24/19 23:14*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		23300	11600	ug/Sample		10/23/19 10:43	11/13/19 06:25	1
Hydrogen Fluoride	ND		5120	2330	ug/Sample		10/23/19 10:43	11/13/19 19:34	20

Client Sample ID: M-2973 R2 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-10

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		61.4	8.10	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,1,3,3-Pentafluorobutane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,1-Trichloroethane	ND		61.4	8.84	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		123	24.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,2,2-Tetrachloroethane	ND		61.4	11.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		123	6.88	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,2-trichloro-1-fluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1,2-Trichloroethane	ND		61.4	6.38	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-Dichloro-1-fluoroethane	ND		123	61.4	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-dichloro-2,2-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-dichloro-2,2-difluoroethene	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-Dichloroethane	ND		61.4	7.37	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-Dichloroethene	ND		61.4	9.09	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-Dichloropropene	ND		61.4	6.63	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,1-Difluoroethene	ND		1230	1230	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2,2-trichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2973 R2 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-10

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichlorobenzene	ND		61.4	19.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2,3-Trichloropropane	ND		61.4	15.2	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2,4-Trichlorobenzene	ND		61.4	20.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2,4-Trimethylbenzene	ND		61.4	12.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-Dibromo-3-Chloropropane	ND		123	21.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-Dibromoethane (EDB)	ND		61.4	8.10	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-dichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-Dichlorobenzene	ND		61.4	10.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-Dichloroethane	ND		61.4	10.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,2-Dichloropropane	ND		61.4	6.14	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,3,5-Trimethylbenzene	ND		61.4	12.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,3-Dichlorobenzene	ND		61.4	10.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,3-Dichloropropane	ND		61.4	6.88	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1,4-Dichlorobenzene	ND		61.4	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
1-Chloro-1,1-difluoroethane	ND		123	12.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2,2-Dichloropropane	ND		61.4	17.9	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2-Butanone (MEK)	ND		246	39.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		123	18.2	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2-Chloro-1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2-Chlorotoluene	ND		61.4	11.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
2-Hexanone	ND		246	56.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Hexafluoropropylene oxide	ND		53.6	53.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
4-Chlorotoluene	ND		61.4	12.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
4-Isopropyltoluene	ND		61.4	16.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
4-Methyl-2-pentanone (MIBK)	ND		246	39.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Acetone	ND		246	145	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Benzene	ND		61.4	11.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Bromobenzene	ND		61.4	8.59	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Bromochloromethane	ND		61.4	13.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Bromodichloromethane	ND		61.4	10.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Bromoform	ND		61.4	18.7	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Bromomethane	ND	*	123	71.2	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Carbon disulfide	ND		61.4	15.2	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Carbon tetrachloride	ND		61.4	8.10	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Chlorobenzene	ND		61.4	8.84	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Chlorodibromomethane	ND		61.4	13.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Chloroethane	ND		123	27.0	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Chloroform	ND		61.4	7.12	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Chloromethane	ND		123	51.1	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
cis-1,2-Dichloroethene	ND		61.4	4.91	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
cis-1,3-Dichloropropene	ND		61.4	10.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Dibromomethane	ND		61.4	5.89	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Dichlorodifluoromethane	ND		123	21.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Ethylbenzene	ND		61.4	10.1	ug/Sample		10/23/19 10:43	10/25/19 12:42	1

Client Sample ID: M-2973 R2 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-10

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Matrix: Air
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		61.4	61.4	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Hexachlorobutadiene	ND		61.4	16.2	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		58.9	58.9	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Isopropylbenzene	ND		61.4	8.59	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
m,p-Xylene	ND		123	10.1	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Methylene Chloride	ND		61.4	39.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Naphthalene	ND		61.4	29.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
n-Butylbenzene	ND		61.4	15.7	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
n-Propylbenzene	ND		61.4	13.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
o-Xylene	ND		61.4	6.38	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
sec-Butylbenzene	ND		61.4	12.0	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Styrene	ND		61.4	13.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
tert-Butylbenzene	ND		61.4	10.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Tetrachloroethene	ND		61.4	8.10	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Toluene	ND		61.4	11.3	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
trans-1,2-Dichloroethene	ND		61.4	6.38	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
trans-1,3-Dichloropropene	ND		61.4	21.6	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Trichloroethene	ND		61.4	4.42	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Trichlorofluoromethane	ND	*	123	11.8	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Vinyl chloride	ND		123	29.5	ug/Sample		10/23/19 10:43	10/25/19 12:42	1
Carbonyl Difluoride	ND		180	180	ug/Sample		10/23/19 10:43	10/25/19 12:42	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*65.1*	*T J*	*ug/Sample*		*1.92*		*10/23/19 10:43*	*10/25/19 12:42*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:43*	*10/25/19 12:42*	*1*
4-Bromofluorobenzene (Surr)	*100*		*57 - 152*	*10/23/19 10:43*	*10/25/19 12:42*	*1*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*10/23/19 10:43*	*10/25/19 12:42*	*1*
Toluene-d8 (Surr)	*107*		*71 - 139*	*10/23/19 10:43*	*10/25/19 12:42*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**17200**	**J**	24600	12300	ug/Sample		10/23/19 10:43	11/13/19 06:46	1
Hydrogen Fluoride	ND		5400	2460	ug/Sample		10/23/19 10:43	11/13/19 20:40	20

Client Sample ID: M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-11

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Matrix: Air
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		54.1	7.15	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,1,3,3-Pentafluorobutane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,1-Trichloroethane	ND		54.1	7.80	ug/Sample		10/23/19 10:43	10/25/19 13:06	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-11

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoro-2,2-dichloroethane	ND		108	21.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,1-Trifluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,2,2-Tetrachloroethane	ND		54.1	10.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		108	6.06	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,2-trichloro-1-fluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1,2-Trichloroethane	ND		54.1	5.63	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-Dichloro-1-fluoroethane	ND		108	54.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-dichloro-2,2-difluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-dichloro-2,2-difluoroethene	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-Dichloroethane	ND		54.1	6.50	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-Dichloroethene	ND		54.1	8.01	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-Dichloropropene	ND		54.1	5.85	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,1-Difluoroethene	ND		1080	1080	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2,2-trichloro-1,1-difluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2,3-Trichlorobenzene	ND		54.1	17.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2,3-Trichloropropane	ND		54.1	13.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2,4-Trichlorobenzene	ND		54.1	18.2	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2,4-Trimethylbenzene	ND		54.1	11.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-Dibromo-3-Chloropropane	ND		108	19.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-Dibromoethane (EDB)	ND		54.1	7.15	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-dichloro-1,1-difluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-Dichlorobenzene	ND		54.1	9.53	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-Dichloroethane	ND		54.1	9.10	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,2-Dichloropropane	ND		54.1	5.41	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,3,5-Trimethylbenzene	ND		54.1	11.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,3-Dichlorobenzene	ND		54.1	9.31	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,3-Dichloropropane	ND		54.1	6.06	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1,4-Dichlorobenzene	ND		54.1	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
1-Chloro-1,1-difluoroethane	ND		108	11.0	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2,2-Dichloropropane	ND		54.1	15.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2-Butanone (MEK)	ND		217	34.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		108	16.0	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2-Chloro-1,1,1-Trifluoroethane	ND		108	10.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2-Chlorotoluene	ND		54.1	10.2	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
2-Hexanone	ND		217	49.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Hexafluoropropylene oxide	ND		47.3	47.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
4-Chlorotoluene	ND		54.1	11.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
4-Isopropyltoluene	ND		54.1	14.5	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
4-Methyl-2-pentanone (MIBK)	ND		217	34.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Acetone	ND		217	128	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Benzene	ND		54.1	10.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Bromobenzene	ND		54.1	7.58	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Bromochloromethane	ND		54.1	12.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Bromodichloromethane	ND		54.1	9.31	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Bromoform	ND		54.1	16.5	ug/Sample		10/23/19 10:43	10/25/19 13:06	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-11

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*	108	62.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Carbon disulfide	ND		54.1	13.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Carbon tetrachloride	ND		54.1	7.15	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Chlorobenzene	ND		54.1	7.80	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Chlorodibromomethane	ND		54.1	11.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Chloroethane	ND		108	23.8	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Chloroform	ND		54.1	6.28	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Chloromethane	ND		108	45.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
cis-1,2-Dichloroethene	ND		54.1	4.33	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
cis-1,3-Dichloropropene	ND		54.1	9.31	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Dibromomethane	ND		54.1	5.20	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Dichlorodifluoromethane	ND		108	19.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Ethylbenzene	ND		54.1	8.88	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		54.1	54.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Hexachlorobutadiene	ND		54.1	14.3	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		51.9	51.9	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Isopropylbenzene	ND		54.1	7.58	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
m,p-Xylene	ND		108	8.88	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Methylene Chloride	ND		54.1	34.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Naphthalene	ND		54.1	26.0	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
n-Butylbenzene	ND		54.1	13.9	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
n-Propylbenzene	ND		54.1	11.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
o-Xylene	ND		54.1	5.63	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
sec-Butylbenzene	ND		54.1	10.6	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Styrene	ND		54.1	11.7	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
tert-Butylbenzene	ND		54.1	9.53	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Tetrachloroethene	ND		54.1	7.15	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Toluene	ND		54.1	9.96	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
trans-1,2-Dichloroethene	ND		54.1	5.63	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
trans-1,3-Dichloropropene	ND		54.1	19.1	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Trichloroethene	ND		54.1	3.90	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Trichlorofluoromethane	ND	*	108	10.4	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Vinyl chloride	ND		108	26.0	ug/Sample		10/23/19 10:43	10/25/19 13:06	1
Carbonyl Difluoride	ND		159	159	ug/Sample		10/23/19 10:43	10/25/19 13:06	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*58.4*	*T J*	*ug/Sample*		*1.91*		*10/23/19 10:43*	*10/25/19 13:06*	*1*
Unknown	*57.6*	*T J*	*ug/Sample*		*2.00*		*10/23/19 10:43*	*10/25/19 13:06*	*1*
Cyclohexane	*63.5*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/25/19 13:06*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*10/23/19 10:43*	*10/25/19 13:06*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*10/23/19 10:43*	*10/25/19 13:06*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:43*	*10/25/19 13:06*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:43*	*10/25/19 13:06*	*1*

Client Sample ID: M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-11

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	11800	J	21700	10800	ug/Sample		10/23/19 10:43	11/13/19 07:06	1
Hydrogen Fluoride	ND		4760	2170	ug/Sample		10/23/19 10:43	11/13/19 21:01	20

Client Sample ID: M-2975 R2 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-12

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		35.9	4.74	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,1,3,3-Pentafluorobutane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,1-Trichloroethane	ND		35.9	5.17	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		71.8	14.2	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,1-Trifluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,2,2-Tetrachloroethane	ND		35.9	6.89	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		71.8	4.02	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,2-trichloro-1-fluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1,2-Trichloroethane	ND		35.9	3.73	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-Dichloro-1-fluoroethane	ND		71.8	35.9	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-dichloro-2,2-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-dichloro-2,2-difluoroethene	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-Dichloroethane	ND		35.9	4.31	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-Dichloroethene	ND		35.9	5.31	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-Dichloropropene	ND		35.9	3.88	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,1-Difluoroethene	ND		718	718	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2,2-trichloro-1,1-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2,3-Trichlorobenzene	ND		35.9	11.5	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2,3-Trichloropropane	ND		35.9	8.90	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2,4-Trichlorobenzene	ND		35.9	12.1	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2,4-Trimethylbenzene	ND		35.9	7.46	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-Dibromo-3-Chloropropane	ND		71.8	12.6	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-Dibromoethane (EDB)	ND		35.9	4.74	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-dichloro-1,1-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-Dichlorobenzene	ND		35.9	6.31	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-Dichloroethane	ND		35.9	6.03	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,2-Dichloropropane	ND		35.9	3.59	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,3,5-Trimethylbenzene	ND		35.9	7.46	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,3-Dichlorobenzene	ND		35.9	6.17	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,3-Dichloropropane	ND		35.9	4.02	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1,4-Dichlorobenzene	ND		35.9	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
1-Chloro-1,1-difluoroethane	ND		71.8	7.32	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2,2-Dichloropropane	ND		35.9	10.5	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2-Butanone (MEK)	ND		144	23.0	ug/Sample		10/23/19 10:43	10/25/19 13:31	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2975 R2 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-12

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		71.8	10.6	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2-Chloro-1,1,1-Trifluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2-Chlorotoluene	ND		35.9	6.75	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
2-Hexanone	ND		144	33.0	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Hexafluoropropylene oxide	ND		31.4	31.4	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
4-Chlorotoluene	ND		35.9	7.46	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
4-Isopropyltoluene	ND		35.9	9.62	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
4-Methyl-2-pentanone (MIBK)	ND		144	23.0	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Acetone	ND		144	84.7	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Benzene	ND		35.9	6.89	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Bromobenzene	ND		35.9	5.02	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Bromochloromethane	ND		35.9	8.04	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Bromodichloromethane	ND		35.9	6.17	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Bromoform	ND		35.9	10.9	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Bromomethane	ND	*	71.8	41.6	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Carbon disulfide	ND		35.9	8.90	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Carbon tetrachloride	ND		35.9	4.74	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Chlorobenzene	ND		35.9	5.17	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Chlorodibromomethane	ND		35.9	7.75	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Chloroethane	ND		71.8	15.8	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Chloroform	ND		35.9	4.16	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Chloromethane	ND		71.8	29.9	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
cis-1,2-Dichloroethene	ND		35.9	2.87	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
cis-1,3-Dichloropropene	ND		35.9	6.17	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Dibromomethane	ND		35.9	3.44	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Dichlorodifluoromethane	ND		71.8	12.6	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Ethylbenzene	ND		35.9	5.88	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		35.9	35.9	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Hexachlorobutadiene	ND		35.9	9.47	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		34.4	34.4	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Isopropylbenzene	ND		35.9	5.02	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
m,p-Xylene	ND		71.8	5.88	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Methylene Chloride	ND		35.9	23.0	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Naphthalene	ND		35.9	17.2	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
n-Butylbenzene	ND		35.9	9.19	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
n-Propylbenzene	ND		35.9	7.75	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
o-Xylene	ND		35.9	3.73	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
sec-Butylbenzene	ND		35.9	7.03	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Styrene	ND		35.9	7.75	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
tert-Butylbenzene	ND		35.9	6.31	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Tetrachloroethene	ND		35.9	4.74	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Toluene	ND		35.9	6.60	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
trans-1,2-Dichloroethene	ND		35.9	3.73	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
trans-1,3-Dichloropropene	ND		35.9	12.6	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Trichloroethene	ND		35.9	2.58	ug/Sample		10/23/19 10:43	10/25/19 13:31	1

Client Sample ID: M-2975 R2 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-12

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	71.8	6.89	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Vinyl chloride	ND		71.8	17.2	ug/Sample		10/23/19 10:43	10/25/19 13:31	1
Carbonyl Difluoride	ND		106	106	ug/Sample		10/23/19 10:43	10/25/19 13:31	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*36.2*	*T J*	*ug/Sample*		*2.05*		*10/23/19 10:43*	*10/25/19 13:31*	*1*
Cyclohexane	*62.5*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/25/19 13:31*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:43*	*10/25/19 13:31*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:43*	*10/25/19 13:31*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:43*	*10/25/19 13:31*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/25/19 13:31*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		14400	7180	ug/Sample		10/23/19 10:43	11/13/19 08:13	1
Hydrogen Fluoride	ND		3160	1440	ug/Sample		10/23/19 10:43	11/13/19 21:22	20

Client Sample ID: M-2976 R2 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-13

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		28.7	3.79	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,1,3,3-Pentafluorobutane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,1-Trichloroethane	ND		28.7	4.13	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		57.4	11.4	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,1-Trifluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,2,2-Tetrachloroethane	ND		28.7	5.51	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		57.4	3.22	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,2-trichloro-1-fluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1,2-Trichloroethane	ND		28.7	2.99	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-Dichloro-1-fluoroethane	ND		57.4	28.7	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-dichloro-2,2-difluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-dichloro-2,2-difluoroethene	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-Dichloroethane	ND		28.7	3.45	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-Dichloroethene	ND		28.7	4.25	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-Dichloropropene	ND		28.7	3.10	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,1-Difluoroethene	ND		574	574	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2,2-trichloro-1,1-difluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2,3-Trichlorobenzene	ND		28.7	9.19	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2,3-Trichloropropane	ND		28.7	7.12	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2,4-Trichlorobenzene	ND		28.7	9.65	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2,4-Trimethylbenzene	**17.1**	**J**	28.7	5.97	ug/Sample		10/23/19 10:43	10/25/19 13:55	1

Client Sample ID: M-2976 R2 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-13

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		57.4	10.1	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2-Dibromoethane (EDB)	ND		28.7	3.79	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2-dichloro-1,1-difluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2-Dichlorobenzene	ND		28.7	5.05	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2-Dichloroethane	ND		28.7	4.82	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,2-Dichloropropane	ND		28.7	2.87	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,3,5-Trimethylbenzene	ND		28.7	5.97	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,3-Dichlorobenzene	ND		28.7	4.94	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,3-Dichloropropane	ND		28.7	3.22	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1,4-Dichlorobenzene	ND		28.7	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
1-Chloro-1,1-difluoroethane	ND		57.4	5.86	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2,2-Dichloropropane	ND		28.7	8.38	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2-Butanone (MEK)	ND		115	18.4	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		57.4	8.50	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2-Chloro-1,1,1-Trifluoroethane	ND		57.4	5.74	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2-Chlorotoluene	ND		28.7	5.40	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
2-Hexanone	ND		115	26.4	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Hexafluoropropylene oxide	ND		25.1	25.1	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
4-Chlorotoluene	ND		28.7	5.97	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
4-Isopropyltoluene	ND		28.7	7.70	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
4-Methyl-2-pentanone (MIBK)	ND		115	18.4	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Acetone	ND		115	67.8	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Benzene	ND		28.7	5.51	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Bromobenzene	ND		28.7	4.02	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Bromochloromethane	ND		28.7	6.43	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Bromodichloromethane	ND		28.7	4.94	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Bromoform	ND		28.7	8.73	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Bromomethane	ND	*	57.4	33.3	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Carbon disulfide	ND		28.7	7.12	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Carbon tetrachloride	ND		28.7	3.79	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Chlorobenzene	ND		28.7	4.13	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Chlorodibromomethane	ND		28.7	6.20	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Chloroethane	ND		57.4	12.6	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Chloroform	ND		28.7	3.33	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Chloromethane	ND		57.4	23.9	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
cis-1,2-Dichloroethene	ND		28.7	2.30	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
cis-1,3-Dichloropropene	ND		28.7	4.94	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Dibromomethane	ND		28.7	2.76	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Dichlorodifluoromethane	ND		57.4	10.1	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Ethylbenzene	ND		28.7	4.71	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		28.7	28.7	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Hexachlorobutadiene	ND		28.7	7.58	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		27.5	27.5	ug/Sample		10/23/19 10:43	10/25/19 13:55	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2976 R2 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-13

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		28.7	4.02	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
m,p-Xylene	ND		57.4	4.71	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Methylene Chloride	ND		28.7	18.4	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Naphthalene	ND		28.7	13.8	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
n-Butylbenzene	ND		28.7	7.35	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
n-Propylbenzene	ND		28.7	6.20	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
o-Xylene	ND		28.7	2.99	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
sec-Butylbenzene	ND		28.7	5.63	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Styrene	ND		28.7	6.20	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
tert-Butylbenzene	ND		28.7	5.05	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Tetrachloroethene	ND		28.7	3.79	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Toluene	ND		28.7	5.28	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
trans-1,2-Dichloroethene	ND		28.7	2.99	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
trans-1,3-Dichloropropene	ND		28.7	10.1	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Trichloroethene	ND		28.7	2.07	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Trichlorofluoromethane	ND	*	57.4	5.51	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Vinyl chloride	ND		57.4	13.8	ug/Sample		10/23/19 10:43	10/25/19 13:55	1
Carbonyl Difluoride	ND		84.3	84.3	ug/Sample		10/23/19 10:43	10/25/19 13:55	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*29.2*	*T J*	*ug/Sample*		*2.08*		*10/23/19 10:43*	*10/25/19 13:55*	*1*
Cyclohexane	*65.7*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/25/19 13:55*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:43*	*10/25/19 13:55*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:43*	*10/25/19 13:55*	*1*
Dibromofluoromethane (Surr)	*81*		*62 - 134*	*10/23/19 10:43*	*10/25/19 13:55*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:43*	*10/25/19 13:55*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		11500	5740	ug/Sample		10/23/19 10:43	11/13/19 08:33	1
Hydrogen Fluoride	ND		2530	1150	ug/Sample		10/23/19 10:43	11/13/19 21:43	20

Client Sample ID: M-2977 R2 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-14

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		29.5	3.90	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,1,3,3-Pentafluorobutane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,1-Trichloroethane	ND		29.5	4.25	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		59.1	11.7	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,1-Trifluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,2,2-Tetrachloroethane	ND		29.5	5.67	ug/Sample		10/23/19 10:43	10/25/19 14:20	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2977 R2 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-14

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		59.1	3.31	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,2-trichloro-1-fluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1,2-Trichloroethane	ND		29.5	3.07	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-Dichloro-1-fluoroethane	ND		59.1	29.5	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-dichloro-2,2-difluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-dichloro-2,2-difluoroethene	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-Dichloroethane	ND		29.5	3.54	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-Dichloroethene	ND		29.5	4.37	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-Dichloropropene	ND		29.5	3.19	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,1-Difluoroethene	ND		591	591	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2,2-trichloro-1,1-difluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2,3-Trichlorobenzene	ND		29.5	9.45	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2,3-Trichloropropane	ND		29.5	7.33	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2,4-Trichlorobenzene	ND		29.5	9.93	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2,4-Trimethylbenzene	ND		29.5	6.14	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-Dibromo-3-Chloropropane	ND		59.1	10.4	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-Dibromoethane (EDB)	ND		29.5	3.90	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-dichloro-1,1-difluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-Dichlorobenzene	ND		29.5	5.20	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-Dichloroethane	ND		29.5	4.96	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,2-Dichloropropane	ND		29.5	2.95	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,3,5-Trimethylbenzene	ND		29.5	6.14	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,3-Dichlorobenzene	ND		29.5	5.08	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,3-Dichloropropane	ND		29.5	3.31	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1,4-Dichlorobenzene	ND		29.5	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
1-Chloro-1,1-difluoroethane	ND		59.1	6.03	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2,2-Dichloropropane	ND		29.5	8.63	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2-Butanone (MEK)	ND		118	18.9	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		59.1	8.74	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2-Chloro-1,1,1-Trifluoroethane	ND		59.1	5.91	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2-Chlorotoluene	ND		29.5	5.55	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
2-Hexanone	ND		118	27.2	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Hexafluoropropylene oxide	ND		25.8	25.8	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
4-Chlorotoluene	ND		29.5	6.14	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
4-Isopropyltoluene	ND		29.5	7.92	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
4-Methyl-2-pentanone (MIBK)	ND		118	18.9	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Acetone	ND		118	69.7	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Benzene	ND		29.5	5.67	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Bromobenzene	ND		29.5	4.14	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Bromochloromethane	ND		29.5	6.62	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Bromodichloromethane	ND		29.5	5.08	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Bromoform	ND		29.5	8.98	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Bromomethane	ND	*	59.1	34.3	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Carbon disulfide	ND		29.5	7.33	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Carbon tetrachloride	ND		29.5	3.90	ug/Sample		10/23/19 10:43	10/25/19 14:20	1

Client Sample ID: M-2977 R2 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-14

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		29.5	4.25	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Chlorodibromomethane	ND		29.5	6.38	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Chloroethane	ND		59.1	13.0	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Chloroform	ND		29.5	3.43	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Chloromethane	ND		59.1	24.6	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
cis-1,2-Dichloroethene	ND		29.5	2.36	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
cis-1,3-Dichloropropene	ND		29.5	5.08	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Dibromomethane	ND		29.5	2.84	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Dichlorodifluoromethane	ND		59.1	10.4	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Ethylbenzene	ND		29.5	4.84	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		29.5	29.5	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Hexachlorobutadiene	ND		29.5	7.80	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		28.3	28.3	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Isopropylbenzene	ND		29.5	4.14	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
m,p-Xylene	ND		59.1	4.84	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Methylene Chloride	ND		29.5	18.9	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Naphthalene	ND		29.5	14.2	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
n-Butylbenzene	ND		29.5	7.56	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
n-Propylbenzene	ND		29.5	6.38	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
o-Xylene	ND		29.5	3.07	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
sec-Butylbenzene	ND		29.5	5.79	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Styrene	ND		29.5	6.38	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
tert-Butylbenzene	ND		29.5	5.20	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Tetrachloroethene	ND		29.5	3.90	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Toluene	ND		29.5	5.44	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
trans-1,2-Dichloroethene	ND		29.5	3.07	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
trans-1,3-Dichloropropene	ND		29.5	10.4	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Trichloroethene	ND		29.5	2.13	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Trichlorofluoromethane	ND	*	59.1	5.67	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Vinyl chloride	ND		59.1	14.2	ug/Sample		10/23/19 10:43	10/25/19 14:20	1
Carbonyl Difluoride	ND		86.5	86.5	ug/Sample		10/23/19 10:43	10/25/19 14:20	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
6-[(6-Nitrosalicylidene)amino] -1H-benzotriazole	*30.4*	*T J N*	*ug/Sample*		*2.07*	*1000225-70-0*	*10/23/19 10:43*	*10/25/19 14:20*	*1*
Cyclohexane	*62.9*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:43*	*10/25/19 14:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:43*	*10/25/19 14:20*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:43*	*10/25/19 14:20*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:43*	*10/25/19 14:20*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/25/19 14:20*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		11800	5910	ug/Sample		10/23/19 10:43	11/13/19 08:54	1
Hydrogen Fluoride	ND		2600	1180	ug/Sample		10/23/19 10:43	11/13/19 22:03	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2978 R2 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-15

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		31.0	4.10	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,1,3,3-Pentafluorobutane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,1-Trichloroethane	ND		31.0	4.47	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		62.1	12.3	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,1-Trifluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,2,2-Tetrachloroethane	ND		31.0	5.96	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		62.1	3.48	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,2-trichloro-1-fluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1,2-Trichloroethane	ND		31.0	3.23	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-Dichloro-1-fluoroethane	ND		62.1	31.0	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-dichloro-2,2-difluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-dichloro-2,2-difluoroethene	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-Dichloroethane	ND		31.0	3.72	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-Dichloroethene	ND		31.0	4.59	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-Dichloropropene	ND		31.0	3.35	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,1-Difluoroethene	ND		621	621	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2,2-trichloro-1,1-difluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2,3-Trichlorobenzene	ND		31.0	9.93	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2,3-Trichloropropane	ND		31.0	7.70	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2,4-Trichlorobenzene	ND		31.0	10.4	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2,4-Trimethylbenzene	ND		31.0	6.45	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-Dibromo-3-Chloropropane	ND		62.1	10.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-Dibromoethane (EDB)	ND		31.0	4.10	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-dichloro-1,1-difluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-Dichlorobenzene	ND		31.0	5.46	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-Dichloroethane	ND		31.0	5.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,2-Dichloropropane	ND		31.0	3.10	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,3,5-Trimethylbenzene	ND		31.0	6.45	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,3-Dichlorobenzene	ND		31.0	5.34	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,3-Dichloropropane	ND		31.0	3.48	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1,4-Dichlorobenzene	ND		31.0	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
1-Chloro-1,1-difluoroethane	ND		62.1	6.33	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2,2-Dichloropropane	ND		31.0	9.06	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2-Butanone (MEK)	ND		124	19.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		62.1	9.18	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2-Chloro-1,1,1-Trifluoroethane	ND		62.1	6.21	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2-Chlorotoluene	ND		31.0	5.83	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
2-Hexanone	ND		124	28.5	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Hexafluoropropylene oxide	ND		27.1	27.1	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
4-Chlorotoluene	ND		31.0	6.45	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
4-Isopropyltoluene	ND		31.0	8.32	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
4-Methyl-2-pentanone (MIBK)	ND		124	19.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Acetone	ND		124	73.2	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Benzene	ND		31.0	5.96	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Bromobenzene	ND		31.0	4.34	ug/Sample		10/23/19 10:45	10/25/19 14:44	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2978 R2 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-15

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		31.0	6.95	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Bromodichloromethane	ND		31.0	5.34	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Bromoform	ND		31.0	9.43	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Bromomethane	ND	*	62.1	36.0	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Carbon disulfide	ND		31.0	7.70	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Carbon tetrachloride	ND		31.0	4.10	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Chlorobenzene	ND		31.0	4.47	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Chlorodibromomethane	ND		31.0	6.70	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Chloroethane	ND		62.1	13.7	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Chloroform	ND		31.0	3.60	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Chloromethane	ND		62.1	25.8	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
cis-1,2-Dichloroethene	ND		31.0	2.48	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
cis-1,3-Dichloropropene	ND		31.0	5.34	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Dibromomethane	ND		31.0	2.98	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Dichlorodifluoromethane	ND		62.1	10.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Ethylbenzene	ND		31.0	5.09	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		31.0	31.0	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Hexachlorobutadiene	ND		31.0	8.19	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		29.7	29.7	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Isopropylbenzene	ND		31.0	4.34	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
m,p-Xylene	ND		62.1	5.09	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Methylene Chloride	ND		31.0	19.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Naphthalene	ND		31.0	14.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
n-Butylbenzene	ND		31.0	7.94	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
n-Propylbenzene	ND		31.0	6.70	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
o-Xylene	ND		31.0	3.23	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
sec-Butylbenzene	ND		31.0	6.08	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Styrene	ND		31.0	6.70	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
tert-Butylbenzene	ND		31.0	5.46	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Tetrachloroethene	ND		31.0	4.10	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Toluene	ND		31.0	5.71	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
trans-1,2-Dichloroethene	ND		31.0	3.23	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
trans-1,3-Dichloropropene	ND		31.0	10.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Trichloroethene	ND		31.0	2.23	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Trichlorofluoromethane	ND	*	62.1	5.96	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Vinyl chloride	ND		62.1	14.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1
Carbonyl Difluoride	ND		90.9	90.9	ug/Sample		10/23/19 10:45	10/25/19 14:44	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*36.0*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:45*	*10/25/19 14:44*	*1*
Cyclohexane	*74.2*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:45*	*10/25/19 14:44*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:45*	*10/25/19 14:44*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:45*	*10/25/19 14:44*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:45*	*10/25/19 14:44*	*1*

Client Sample ID: M-2978 R2 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-15

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		71 - 139	10/23/19 10:45	10/25/19 14:44	1

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		12400	6210	ug/Sample		10/23/19 10:45	11/13/19 09:15	1
Hydrogen Fluoride	ND		2730	1240	ug/Sample		10/23/19 10:45	11/13/19 22:24	20

Client Sample ID: M-2979 R2 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-16

Date Collected: 10/15/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.4	3.48	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,1,3,3-Pentafluorobutane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,1-Trichloroethane	ND		26.4	3.80	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.7	10.4	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,1-Trifluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,2,2-Tetrachloroethane	ND		26.4	5.06	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.7	2.95	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,2-trichloro-1-fluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1,2-Trichloroethane	ND		26.4	2.74	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-Dichloro-1-fluoroethane	ND		52.7	26.4	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-dichloro-2,2-difluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-dichloro-2,2-difluoroethene	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-Dichloroethane	ND		26.4	3.16	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-Dichloroethene	ND		26.4	3.90	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-Dichloropropene	ND		26.4	2.85	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,1-Difluoroethene	ND		527	527	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2,3-Trichlorobenzene	ND		26.4	8.44	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2,3-Trichloropropane	ND		26.4	6.54	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2,4-Trichlorobenzene	ND		26.4	8.86	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2,4-Trimethylbenzene	ND		26.4	5.49	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-Dibromo-3-Chloropropane	ND		52.7	9.28	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-Dibromoethane (EDB)	ND		26.4	3.48	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-dichloro-1,1-difluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-Dichlorobenzene	ND		26.4	4.64	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-Dichloroethane	ND		26.4	4.43	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,2-Dichloropropane	ND		26.4	2.64	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,3,5-Trimethylbenzene	ND		26.4	5.49	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,3-Dichlorobenzene	ND		26.4	4.54	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,3-Dichloropropane	ND		26.4	2.95	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1,4-Dichlorobenzene	ND		26.4	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
1-Chloro-1,1-difluoroethane	ND		52.7	5.38	ug/Sample		10/23/19 10:45	10/25/19 15:09	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2979 R2 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-16

Date Collected: 10/15/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2,2-Dichloropropane	ND		26.4	7.70	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2-Butanone (MEK)	ND		105	16.9	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.7	7.81	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.7	5.27	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2-Chlorotoluene	ND		26.4	4.96	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
2-Hexanone	ND		105	24.3	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Hexafluoropropylene oxide	ND		23.1	23.1	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
4-Chlorotoluene	ND		26.4	5.49	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
4-Isopropyltoluene	ND		26.4	7.07	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
4-Methyl-2-pentanone (MIBK)	ND		105	16.9	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Acetone	ND		105	62.2	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Benzene	ND		26.4	5.06	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Bromobenzene	ND		26.4	3.69	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Bromochloromethane	ND		26.4	5.91	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Bromodichloromethane	ND		26.4	4.54	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Bromoform	ND		26.4	8.02	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Bromomethane	ND	*	52.7	30.6	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Carbon disulfide	ND		26.4	6.54	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Carbon tetrachloride	ND		26.4	3.48	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Chlorobenzene	ND		26.4	3.80	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Chlorodibromomethane	ND		26.4	5.70	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Chloroethane	ND		52.7	11.6	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Chloroform	ND		26.4	3.06	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Chloromethane	ND		52.7	21.9	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
cis-1,2-Dichloroethene	ND		26.4	2.11	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
cis-1,3-Dichloropropene	ND		26.4	4.54	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Dibromomethane	ND		26.4	2.53	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Dichlorodifluoromethane	ND		52.7	9.28	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Ethylbenzene	ND		26.4	4.33	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.4	26.4	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Hexachlorobutadiene	ND		26.4	6.96	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		25.3	25.3	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Isopropylbenzene	ND		26.4	3.69	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
m,p-Xylene	ND		52.7	4.33	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Methylene Chloride	ND		26.4	16.9	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Naphthalene	ND		26.4	12.7	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
n-Butylbenzene	ND		26.4	6.75	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
n-Propylbenzene	ND		26.4	5.70	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
o-Xylene	ND		26.4	2.74	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
sec-Butylbenzene	ND		26.4	5.17	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Styrene	ND		26.4	5.70	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
tert-Butylbenzene	ND		26.4	4.64	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Tetrachloroethene	ND		26.4	3.48	ug/Sample		10/23/19 10:45	10/25/19 15:09	1

Client Sample ID: M-2979 R2 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-16

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		26.4	4.85	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
trans-1,2-Dichloroethene	ND		26.4	2.74	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
trans-1,3-Dichloropropene	ND		26.4	9.28	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Trichloroethene	ND		26.4	1.90	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Trichlorofluoromethane	ND	*	52.7	5.06	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Vinyl chloride	ND		52.7	12.7	ug/Sample		10/23/19 10:45	10/25/19 15:09	1
Carbonyl Difluoride	ND		76.9	76.9	ug/Sample		10/23/19 10:45	10/25/19 15:09	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*27.4*	*T J*	*ug/Sample*		*1.82*		*10/23/19 10:45*	*10/25/19 15:09*	*1*
Unknown	*32.2*	*T J*	*ug/Sample*		*2.06*		*10/23/19 10:45*	*10/25/19 15:09*	*1*
Cyclohexane	*52.5*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:45*	*10/25/19 15:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:45*	*10/25/19 15:09*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:45*	*10/25/19 15:09*	*1*
Dibromofluoromethane (Surr)	*86*		*62 - 134*	*10/23/19 10:45*	*10/25/19 15:09*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:45*	*10/25/19 15:09*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10500	5270	ug/Sample		10/23/19 10:45	11/13/19 09:35	1
Hydrogen Fluoride	ND		2320	1050	ug/Sample		10/23/19 10:45	11/14/19 12:27	20

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		82.9	10.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,1,3,3-Pentafluorobutane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,1-Trichloroethane	ND		82.9	11.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		166	32.8	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,1-Trifluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,2,2-Tetrachloroethane	ND		82.9	15.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		166	9.28	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,2-trichloro-1-fluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1,2-Trichloroethane	ND		82.9	8.62	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-Dichloro-1-fluoroethane	ND		166	82.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-dichloro-2,2-difluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-dichloro-2,2-difluoroethene	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-Dichloroethane	ND		82.9	9.95	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-Dichloroethene	ND		82.9	12.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-Dichloropropene	ND		82.9	8.95	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,1-Difluoroethene	ND		1660	1660	ug/Sample		10/23/19 10:46	10/25/19 15:33	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,2-trichloro-1,1-difluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2,3-Trichlorobenzene	ND		82.9	26.5	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2,3-Trichloropropane	ND		82.9	20.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2,4-Trichlorobenzene	ND		82.9	27.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2,4-Trimethylbenzene	ND		82.9	17.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-Dibromo-3-Chloropropane	ND		166	29.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-Dibromoethane (EDB)	ND		82.9	10.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-dichloro-1,1-difluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-Dichlorobenzene	ND		82.9	14.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-Dichloroethane	ND		82.9	13.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,2-Dichloropropane	ND		82.9	8.29	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,3,5-Trimethylbenzene	ND		82.9	17.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,3-Dichlorobenzene	ND		82.9	14.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,3-Dichloropropane	ND		82.9	9.28	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1,4-Dichlorobenzene	ND		82.9	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
1-Chloro-1,1-difluoroethane	ND		166	16.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2,2-Dichloropropane	ND		82.9	24.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2-Butanone (MEK)	ND		332	53.1	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		166	24.5	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2-Chloro-1,1,1-Trifluoroethane	ND		166	16.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2-Chlorotoluene	ND		82.9	15.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
2-Hexanone	ND		332	76.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Hexafluoropropylene oxide	ND		72.4	72.4	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
4-Chlorotoluene	ND		82.9	17.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
4-Isopropyltoluene	ND		82.9	22.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
4-Methyl-2-pentanone (MIBK)	ND		332	53.1	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Acetone	ND		332	196	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Benzene	ND		82.9	15.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Bromobenzene	ND		82.9	11.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Bromochloromethane	ND		82.9	18.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Bromodichloromethane	ND		82.9	14.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Bromoform	ND		82.9	25.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Bromomethane	ND	*	166	96.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Carbon disulfide	ND		82.9	20.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Carbon tetrachloride	ND		82.9	10.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Chlorobenzene	ND		82.9	11.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Chlorodibromomethane	ND		82.9	17.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Chloroethane	ND		166	36.5	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Chloroform	ND		82.9	9.62	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Chloromethane	ND		166	69.0	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
cis-1,2-Dichloroethene	ND		82.9	6.63	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
cis-1,3-Dichloropropene	ND		82.9	14.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Dibromomethane	ND		82.9	7.96	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Dichlorodifluoromethane	ND		166	29.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Ethylbenzene	ND		82.9	13.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		82.9	82.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Hexachlorobutadiene	ND		82.9	21.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		79.5	79.5	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Isopropylbenzene	ND		82.9	11.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
m,p-Xylene	ND		166	13.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Methylene Chloride	ND		82.9	53.1	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Naphthalene	ND		82.9	39.8	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
n-Butylbenzene	ND		82.9	21.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
n-Propylbenzene	ND		82.9	17.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
o-Xylene	ND		82.9	8.62	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
sec-Butylbenzene	ND		82.9	16.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Styrene	ND		82.9	17.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
tert-Butylbenzene	ND		82.9	14.6	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Tetrachloroethene	ND		82.9	10.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Toluene	ND		82.9	15.3	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
trans-1,2-Dichloroethene	ND		82.9	8.62	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
trans-1,3-Dichloropropene	ND		82.9	29.2	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Trichloroethene	ND		82.9	5.97	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Trichlorofluoromethane	ND	*	166	15.9	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Vinyl chloride	ND		166	39.8	ug/Sample		10/23/19 10:46	10/25/19 15:33	1
Carbonyl Difluoride	ND		243	243	ug/Sample		10/23/19 10:46	10/25/19 15:33	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:46*	*10/25/19 15:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:46*	*10/25/19 15:33*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*10/23/19 10:46*	*10/25/19 15:33*	*1*
Dibromofluoromethane (Surr)	*89*		*62 - 134*	*10/23/19 10:46*	*10/25/19 15:33*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:46*	*10/25/19 15:33*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		33200	16600	ug/Sample		10/23/19 10:46	11/14/19 18:20	1
Hydrogen Fluoride	ND		7290	3320	ug/Sample		10/23/19 10:46	11/14/19 12:47	20

Client Sample ID: M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-18

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		67.5	8.91	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,1,3,3-Pentafluorobutane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,1-Trichloroethane	ND		67.5	9.72	ug/Sample		10/23/19 10:46	10/25/19 15:58	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-18

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoro-2,2-dichloroethane	ND		135	26.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,1-Trifluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,2,2-Tetrachloroethane	ND		67.5	13.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		135	7.56	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,2-trichloro-1-fluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1,2-Trichloroethane	ND		67.5	7.02	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-Dichloro-1-fluoroethane	ND		135	67.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-dichloro-2,2-difluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-dichloro-2,2-difluoroethene	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-Dichloroethane	ND		67.5	8.10	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-Dichloroethene	ND		67.5	9.99	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-Dichloropropene	ND		67.5	7.29	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,1-Difluoroethene	ND		1350	1350	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2,2-trichloro-1,1-difluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2,3-Trichlorobenzene	ND		67.5	21.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2,3-Trichloropropane	ND		67.5	16.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2,4-Trichlorobenzene	ND		67.5	22.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2,4-Trimethylbenzene	ND		67.5	14.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-Dibromo-3-Chloropropane	ND		135	23.8	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-Dibromoethane (EDB)	ND		67.5	8.91	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-dichloro-1,1-difluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-Dichlorobenzene	ND		67.5	11.9	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-Dichloroethane	ND		67.5	11.3	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,2-Dichloropropane	ND		67.5	6.75	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,3,5-Trimethylbenzene	ND		67.5	14.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,3-Dichlorobenzene	ND		67.5	11.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,3-Dichloropropane	ND		67.5	7.56	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1,4-Dichlorobenzene	ND		67.5	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
1-Chloro-1,1-difluoroethane	ND		135	13.8	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2,2-Dichloropropane	ND		67.5	19.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2-Butanone (MEK)	ND		270	43.2	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		135	20.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2-Chloro-1,1,1-Trifluoroethane	ND		135	13.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2-Chlorotoluene	ND		67.5	12.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
2-Hexanone	ND		270	62.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Hexafluoropropylene oxide	ND		59.0	59.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
4-Chlorotoluene	ND		67.5	14.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
4-Isopropyltoluene	ND		67.5	18.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
4-Methyl-2-pentanone (MIBK)	ND		270	43.2	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Acetone	ND		270	159	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Benzene	ND		67.5	13.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Bromobenzene	ND		67.5	9.45	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Bromochloromethane	ND		67.5	15.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Bromodichloromethane	ND		67.5	11.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Bromoform	ND		67.5	20.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-18

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromomethane	ND	*	135	78.3	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Carbon disulfide	ND		67.5	16.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Carbon tetrachloride	ND		67.5	8.91	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Chlorobenzene	ND		67.5	9.72	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Chlorodibromomethane	ND		67.5	14.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Chloroethane	ND		135	29.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Chloroform	ND		67.5	7.83	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Chloromethane	ND		135	56.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
cis-1,2-Dichloroethene	ND		67.5	5.40	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
cis-1,3-Dichloropropene	ND		67.5	11.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Dibromomethane	ND		67.5	6.48	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Dichlorodifluoromethane	ND		135	23.8	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Ethylbenzene	ND		67.5	11.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		67.5	67.5	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Hexachlorobutadiene	ND		67.5	17.8	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		64.7	64.7	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Isopropylbenzene	ND		67.5	9.45	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
m,p-Xylene	ND		135	11.1	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Methylene Chloride	ND		67.5	43.2	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Naphthalene	ND		67.5	32.4	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
n-Butylbenzene	ND		67.5	17.3	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
n-Propylbenzene	ND		67.5	14.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
o-Xylene	ND		67.5	7.02	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
sec-Butylbenzene	ND		67.5	13.2	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Styrene	ND		67.5	14.6	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
tert-Butylbenzene	ND		67.5	11.9	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Tetrachloroethene	ND		67.5	8.91	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Toluene	ND		67.5	12.4	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
trans-1,2-Dichloroethene	ND		67.5	7.02	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
trans-1,3-Dichloropropene	ND		67.5	23.8	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Trichloroethene	ND		67.5	4.86	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Trichlorofluoromethane	ND	*	135	13.0	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Vinyl chloride	ND		135	32.4	ug/Sample		10/23/19 10:46	10/25/19 15:58	1
Carbonyl Difluoride	ND		198	198	ug/Sample		10/23/19 10:46	10/25/19 15:58	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*79.0*	*T J*	*ug/Sample*		*1.93*		*10/23/19 10:46*	*10/25/19 15:58*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:46*	*10/25/19 15:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:46*	*10/25/19 15:58*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:46*	*10/25/19 15:58*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:46*	*10/25/19 15:58*	*1*

Client Sample ID: M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-18

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		27000	13500	ug/Sample		10/23/19 10:46	11/14/19 19:26	1
Hydrogen Fluoride	ND		5940	2700	ug/Sample		10/23/19 10:46	11/14/19 13:08	20

Client Sample ID: M-2982 R3 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-19

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		35.9	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,1,3,3-Pentafluorobutane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,1-Trichloroethane	ND		35.9	5.17	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		71.8	14.2	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,1-Trifluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,2,2-Tetrachloroethane	ND		35.9	6.89	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		71.8	4.02	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,2-trichloro-1-fluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1,2-Trichloroethane	ND		35.9	3.73	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-Dichloro-1-fluoroethane	ND		71.8	35.9	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-dichloro-2,2-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-dichloro-2,2-difluoroethene	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-Dichloroethane	ND		35.9	4.31	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-Dichloroethene	ND		35.9	5.31	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-Dichloropropene	ND		35.9	3.87	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,1-Difluoroethene	ND		718	718	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2,2-trichloro-1,1-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2,3-Trichlorobenzene	ND		35.9	11.5	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2,3-Trichloropropane	ND		35.9	8.90	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2,4-Trichlorobenzene	ND		35.9	12.1	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2,4-Trimethylbenzene	ND		35.9	7.46	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-Dibromo-3-Chloropropane	ND		71.8	12.6	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-Dibromoethane (EDB)	ND		35.9	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-dichloro-1,1-difluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-Dichlorobenzene	ND		35.9	6.31	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-Dichloroethane	ND		35.9	6.03	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,2-Dichloropropane	ND		35.9	3.59	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,3,5-Trimethylbenzene	ND		35.9	7.46	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,3-Dichlorobenzene	ND		35.9	6.17	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,3-Dichloropropane	ND		35.9	4.02	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1,4-Dichlorobenzene	ND		35.9	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
1-Chloro-1,1-difluoroethane	ND		71.8	7.32	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2,2-Dichloropropane	ND		35.9	10.5	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2-Butanone (MEK)	ND		144	23.0	ug/Sample		10/23/19 10:46	10/25/19 16:22	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2982 R3 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-19

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		71.8	10.6	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2-Chloro-1,1,1-Trifluoroethane	ND		71.8	7.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2-Chlorotoluene	ND		35.9	6.74	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
2-Hexanone	ND		144	33.0	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Hexafluoropropylene oxide	ND		31.4	31.4	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
4-Chlorotoluene	ND		35.9	7.46	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
4-Isopropyltoluene	ND		35.9	9.62	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
4-Methyl-2-pentanone (MIBK)	ND		144	23.0	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Acetone	ND		144	84.7	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Benzene	ND		35.9	6.89	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Bromobenzene	ND		35.9	5.02	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Bromochloromethane	ND		35.9	8.04	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Bromodichloromethane	ND		35.9	6.17	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Bromoform	ND		35.9	10.9	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Bromomethane	**42.0**	**J ***	71.8	41.6	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Carbon disulfide	ND		35.9	8.90	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Carbon tetrachloride	ND		35.9	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Chlorobenzene	ND		35.9	5.17	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Chlorodibromomethane	ND		35.9	7.75	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Chloroethane	ND		71.8	15.8	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Chloroform	ND		35.9	4.16	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Chloromethane	ND		71.8	29.9	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
cis-1,2-Dichloroethene	ND		35.9	2.87	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
cis-1,3-Dichloropropene	ND		35.9	6.17	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Dibromomethane	ND		35.9	3.44	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Dichlorodifluoromethane	ND		71.8	12.6	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Ethylbenzene	ND		35.9	5.88	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		35.9	35.9	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Hexachlorobutadiene	ND		35.9	9.47	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		34.4	34.4	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Isopropylbenzene	ND		35.9	5.02	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
m,p-Xylene	ND		71.8	5.88	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Methylene Chloride	ND		35.9	23.0	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Naphthalene	ND		35.9	17.2	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
n-Butylbenzene	ND		35.9	9.18	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
n-Propylbenzene	ND		35.9	7.75	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
o-Xylene	ND		35.9	3.73	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
sec-Butylbenzene	ND		35.9	7.03	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Styrene	ND		35.9	7.75	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
tert-Butylbenzene	ND		35.9	6.31	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Tetrachloroethene	ND		35.9	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Toluene	ND		35.9	6.60	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
trans-1,2-Dichloroethene	ND		35.9	3.73	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
trans-1,3-Dichloropropene	ND		35.9	12.6	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Trichloroethene	ND		35.9	2.58	ug/Sample		10/23/19 10:46	10/25/19 16:22	1

Client Sample ID: M-2982 R3 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-19

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	71.8	6.89	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Vinyl chloride	ND		71.8	17.2	ug/Sample		10/23/19 10:46	10/25/19 16:22	1
Carbonyl Difluoride	ND		106	106	ug/Sample		10/23/19 10:46	10/25/19 16:22	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Sulfur dioxide	*309*	*T J N*	*ug/Sample*		*1.40*	*7446-09-5*	*10/23/19 10:46*	*10/25/19 16:22*	*1*
Sulfur dioxide	*68.7*	*T J N*	*ug/Sample*		*1.51*	*7446-09-5*	*10/23/19 10:46*	*10/25/19 16:22*	*1*
Cyclohexane	*52.9*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:46*	*10/25/19 16:22*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*10/23/19 10:46*	*10/25/19 16:22*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:46*	*10/25/19 16:22*	*1*
Dibromofluoromethane (Surr)	*79*		*62 - 134*	*10/23/19 10:46*	*10/25/19 16:22*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:46*	*10/25/19 16:22*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		14400	7220	ug/Sample		10/23/19 10:46	11/14/19 19:47	1
Hydrogen Fluoride	ND		3160	1440	ug/Sample		10/23/19 10:46	11/14/19 13:29	20

Client Sample ID: M-2983 R3 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-20

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		28.9	3.82	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,1,3,3-Pentafluorobutane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,1-Trichloroethane	ND		28.9	4.16	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		57.8	11.4	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,1-Trifluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,2,2-Tetrachloroethane	ND		28.9	5.55	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		57.8	3.24	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,2-trichloro-1-fluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1,2-Trichloroethane	ND		28.9	3.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-Dichloro-1-fluoroethane	ND		57.8	28.9	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-dichloro-2,2-difluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-dichloro-2,2-difluoroethene	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-Dichloroethane	ND		28.9	3.47	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-Dichloroethene	ND		28.9	4.28	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-Dichloropropene	ND		28.9	3.12	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,1-Difluoroethene	ND		578	578	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2,2-trichloro-1,1-difluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2,3-Trichlorobenzene	ND		28.9	9.25	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2,3-Trichloropropane	ND		28.9	7.17	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2,4-Trichlorobenzene	ND		28.9	9.71	ug/Sample		10/23/19 10:46	10/25/19 16:47	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2983 R3 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-20

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trimethylbenzene	ND		28.9	6.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-Dibromo-3-Chloropropane	ND		57.8	10.2	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-Dibromoethane (EDB)	ND		28.9	3.82	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-dichloro-1,1-difluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-Dichlorobenzene	ND		28.9	5.09	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-Dichloroethane	ND		28.9	4.86	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,2-Dichloropropane	ND		28.9	2.89	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,3,5-Trimethylbenzene	ND		28.9	6.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,3-Dichlorobenzene	ND		28.9	4.97	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,3-Dichloropropane	ND		28.9	3.24	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1,4-Dichlorobenzene	ND		28.9	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
1-Chloro-1,1-difluoroethane	ND		57.8	5.90	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2,2-Dichloropropane	ND		28.9	8.44	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2-Butanone (MEK)	ND		116	18.5	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		57.8	8.56	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2-Chloro-1,1,1-Trifluoroethane	ND		57.8	5.78	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2-Chlorotoluene	ND		28.9	5.43	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
2-Hexanone	ND		116	26.6	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Hexafluoropropylene oxide	ND		25.2	25.2	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
4-Chlorotoluene	ND		28.9	6.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
4-Isopropyltoluene	ND		28.9	7.75	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
4-Methyl-2-pentanone (MIBK)	ND		116	18.5	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Acetone	ND		116	68.2	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Benzene	ND		28.9	5.55	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Bromobenzene	ND		28.9	4.05	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Bromochloromethane	ND		28.9	6.47	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Bromodichloromethane	ND		28.9	4.97	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Bromoform	ND		28.9	8.79	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Bromomethane	ND	*	57.8	33.5	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Carbon disulfide	ND		28.9	7.17	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Carbon tetrachloride	ND		28.9	3.82	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Chlorobenzene	ND		28.9	4.16	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Chlorodibromomethane	ND		28.9	6.24	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Chloroethane	ND		57.8	12.7	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Chloroform	ND		28.9	3.35	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Chloromethane	ND		57.8	24.0	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
cis-1,2-Dichloroethene	ND		28.9	2.31	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
cis-1,3-Dichloropropene	ND		28.9	4.97	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Dibromomethane	ND		28.9	2.77	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Dichlorodifluoromethane	ND		57.8	10.2	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Ethylbenzene	ND		28.9	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		28.9	28.9	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Hexachlorobutadiene	ND		28.9	7.63	ug/Sample		10/23/19 10:46	10/25/19 16:47	1

Client Sample ID: M-2983 R3 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-20

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		27.7	27.7	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Isopropylbenzene	ND		28.9	4.05	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
m,p-Xylene	ND		57.8	4.74	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Methylene Chloride	ND		28.9	18.5	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Naphthalene	ND		28.9	13.9	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
n-Butylbenzene	ND		28.9	7.40	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
n-Propylbenzene	ND		28.9	6.24	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
o-Xylene	ND		28.9	3.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
sec-Butylbenzene	ND		28.9	5.67	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Styrene	ND		28.9	6.24	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
tert-Butylbenzene	ND		28.9	5.09	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Tetrachloroethene	ND		28.9	3.82	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Toluene	ND		28.9	5.32	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
trans-1,2-Dichloroethene	ND		28.9	3.01	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
trans-1,3-Dichloropropene	ND		28.9	10.2	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Trichloroethene	ND		28.9	2.08	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Trichlorofluoromethane	ND	*	57.8	5.55	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Vinyl chloride	ND		57.8	13.9	ug/Sample		10/23/19 10:46	10/25/19 16:47	1
Carbonyl Difluoride	ND		85.0	85.0	ug/Sample		10/23/19 10:46	10/25/19 16:47	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
N,N'-Nonamethylenebis[-S-3-aminopropyl thiosulfuric acid]	*32.7*	*T J N*	*ug/Sample*		*2.07*	*35871-58-0*	*10/23/19 10:46*	*10/25/19 16:47*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*	*10/23/19 10:46*	*10/25/19 16:47*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:46*	*10/25/19 16:47*	*1*
Dibromofluoromethane (Surr)	*86*		*62 - 134*	*10/23/19 10:46*	*10/25/19 16:47*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:46*	*10/25/19 16:47*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		11600	5780	ug/Sample		10/23/19 10:46	11/14/19 20:08	1
Hydrogen Fluoride	ND		2540	1160	ug/Sample		10/23/19 10:46	11/14/19 13:49	20

Client Sample ID: M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-21

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		30.5	4.03	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,1,3,3-Pentafluorobutane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,1-Trichloroethane	ND		30.5	4.39	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		61.0	12.1	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,1-Trifluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-21

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		30.5	5.86	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		61.0	3.42	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,2-trichloro-1-fluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1,2-Trichloroethane	ND		30.5	3.17	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-Dichloro-1-fluoroethane	ND		61.0	30.5	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-dichloro-2,2-difluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-dichloro-2,2-difluoroethene	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-Dichloroethane	ND		30.5	3.66	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-Dichloroethene	ND		30.5	4.52	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-Dichloropropene	ND		30.5	3.29	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,1-Difluoroethene	ND		610	610	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2,2-trichloro-1,1-difluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2,3-Trichlorobenzene	ND		30.5	9.76	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2,3-Trichloropropane	ND		30.5	7.57	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2,4-Trichlorobenzene	ND		30.5	10.3	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2,4-Trimethylbenzene	ND		30.5	6.35	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-Dibromo-3-Chloropropane	ND		61.0	10.7	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-Dibromoethane (EDB)	ND		30.5	4.03	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-dichloro-1,1-difluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-Dichlorobenzene	ND		30.5	5.37	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-Dichloroethane	ND		30.5	5.13	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,2-Dichloropropane	ND		30.5	3.05	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,3,5-Trimethylbenzene	ND		30.5	6.35	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,3-Dichlorobenzene	ND		30.5	5.25	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,3-Dichloropropane	ND		30.5	3.42	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1,4-Dichlorobenzene	ND		30.5	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
1-Chloro-1,1-difluoroethane	ND		61.0	6.22	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2,2-Dichloropropane	ND		30.5	8.91	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2-Butanone (MEK)	ND		122	19.5	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		61.0	9.03	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2-Chloro-1,1,1-Trifluoroethane	ND		61.0	6.10	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2-Chlorotoluene	ND		30.5	5.74	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
2-Hexanone	ND		122	28.1	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Hexafluoropropylene oxide	ND		26.6	26.6	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
4-Chlorotoluene	ND		30.5	6.35	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
4-Isopropyltoluene	ND		30.5	8.18	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
4-Methyl-2-pentanone (MIBK)	ND		122	19.5	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Acetone	ND		122	72.0	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Benzene	ND		30.5	5.86	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Bromobenzene	ND		30.5	4.27	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Bromochloromethane	ND		30.5	6.83	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Bromodichloromethane	ND		30.5	5.25	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Bromoform	ND		30.5	9.27	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Bromomethane	ND	*	61.0	35.4	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Carbon disulfide	ND		30.5	7.57	ug/Sample		10/23/19 10:46	10/25/19 17:20	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-21

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		30.5	4.03	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Chlorobenzene	ND		30.5	4.39	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Chlorodibromomethane	ND		30.5	6.59	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Chloroethane	ND		61.0	13.4	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Chloroform	ND		30.5	3.54	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Chloromethane	ND		61.0	25.4	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
cis-1,2-Dichloroethene	ND		30.5	2.44	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
cis-1,3-Dichloropropene	ND		30.5	5.25	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Dibromomethane	ND		30.5	2.93	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Dichlorodifluoromethane	ND		61.0	10.7	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Ethylbenzene	ND		30.5	5.00	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		30.5	30.5	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Hexachlorobutadiene	ND		30.5	8.05	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		29.3	29.3	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Isopropylbenzene	ND		30.5	4.27	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
m,p-Xylene	ND		61.0	5.00	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Methylene Chloride	ND		30.5	19.5	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Naphthalene	ND		30.5	14.6	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
n-Butylbenzene	ND		30.5	7.81	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
n-Propylbenzene	ND		30.5	6.59	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
o-Xylene	ND		30.5	3.17	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
sec-Butylbenzene	ND		30.5	5.98	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Styrene	ND		30.5	6.59	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
tert-Butylbenzene	ND		30.5	5.37	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Tetrachloroethene	ND		30.5	4.03	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Toluene	ND		30.5	5.61	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
trans-1,2-Dichloroethene	ND		30.5	3.17	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
trans-1,3-Dichloropropene	ND		30.5	10.7	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Trichloroethene	ND		30.5	2.20	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Trichlorofluoromethane	ND	*	61.0	5.86	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Vinyl chloride	ND		61.0	14.6	ug/Sample		10/23/19 10:46	10/25/19 17:20	1
Carbonyl Difluoride	ND		89.4	89.4	ug/Sample		10/23/19 10:46	10/25/19 17:20	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*32.8*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:46*	*10/25/19 17:20*	*1*
Cyclohexane	*58.6*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:46*	*10/25/19 17:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:46*	*10/25/19 17:20*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*10/23/19 10:46*	*10/25/19 17:20*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:46*	*10/25/19 17:20*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:46*	*10/25/19 17:20*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		12200	6100	ug/Sample		10/23/19 10:46	11/14/19 20:28	1

Client Sample ID: M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-21

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		2680	1220	ug/Sample		10/23/19 10:46	11/14/19 14:12	20

Client Sample ID: M-2985 R3 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-22

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		28.3	3.74	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,1,3,3-Pentafluorobutane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,1-Trichloroethane	ND		28.3	4.08	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		56.6	11.2	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,1-Trifluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,2,2-Tetrachloroethane	ND		28.3	5.43	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		56.6	3.17	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,2-trichloro-1-fluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1,2-Trichloroethane	ND		28.3	2.94	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-Dichloro-1-fluoroethane	ND		56.6	28.3	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-dichloro-2,2-difluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-dichloro-2,2-difluoroethene	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-Dichloroethane	ND		28.3	3.40	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-Dichloroethene	ND		28.3	4.19	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-Dichloropropene	ND		28.3	3.06	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,1-Difluoroethene	ND		566	566	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2,2-trichloro-1,1-difluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2,3-Trichlorobenzene	ND		28.3	9.06	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2,3-Trichloropropane	ND		28.3	7.02	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2,4-Trichlorobenzene	ND		28.3	9.51	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2,4-Trimethylbenzene	ND		28.3	5.89	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-Dibromo-3-Chloropropane	ND		56.6	9.96	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-Dibromoethane (EDB)	ND		28.3	3.74	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-dichloro-1,1-difluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-Dichlorobenzene	ND		28.3	4.98	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-Dichloroethane	ND		28.3	4.76	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,2-Dichloropropane	ND		28.3	2.83	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,3,5-Trimethylbenzene	ND		28.3	5.89	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,3-Dichlorobenzene	ND		28.3	4.87	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,3-Dichloropropane	ND		28.3	3.17	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1,4-Dichlorobenzene	ND		28.3	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
1-Chloro-1,1-difluoroethane	ND		56.6	5.77	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2,2-Dichloropropane	ND		28.3	8.27	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2-Butanone (MEK)	ND		113	18.1	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		56.6	8.38	ug/Sample		10/23/19 10:46	10/25/19 17:45	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2985 R3 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-22

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloro-1,1,1-Trifluoroethane	ND		56.6	5.66	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2-Chlorotoluene	ND		28.3	5.32	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
2-Hexanone	ND		113	26.0	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Hexafluoropropylene oxide	ND		24.7	24.7	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
4-Chlorotoluene	ND		28.3	5.89	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
4-Isopropyltoluene	ND		28.3	7.59	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
4-Methyl-2-pentanone (MIBK)	ND		113	18.1	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Acetone	ND		113	66.8	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Benzene	ND		28.3	5.43	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Bromobenzene	ND		28.3	3.96	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Bromochloromethane	ND		28.3	6.34	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Bromodichloromethane	ND		28.3	4.87	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Bromoform	ND		28.3	8.60	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Bromomethane	ND	*	56.6	32.8	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Carbon disulfide	ND		28.3	7.02	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Carbon tetrachloride	ND		28.3	3.74	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Chlorobenzene	ND		28.3	4.08	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Chlorodibromomethane	ND		28.3	6.11	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Chloroethane	ND		56.6	12.5	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Chloroform	ND		28.3	3.28	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Chloromethane	ND		56.6	23.5	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
cis-1,2-Dichloroethene	ND		28.3	2.26	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
cis-1,3-Dichloropropene	ND		28.3	4.87	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Dibromomethane	ND		28.3	2.72	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Dichlorodifluoromethane	ND		56.6	9.96	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Ethylbenzene	ND		28.3	4.64	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		28.3	28.3	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Hexachlorobutadiene	ND		28.3	7.47	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		27.1	27.1	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Isopropylbenzene	ND		28.3	3.96	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
m,p-Xylene	ND		56.6	4.64	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Methylene Chloride	ND		28.3	18.1	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Naphthalene	ND		28.3	13.6	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
n-Butylbenzene	ND		28.3	7.25	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
n-Propylbenzene	ND		28.3	6.11	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
o-Xylene	ND		28.3	2.94	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
sec-Butylbenzene	ND		28.3	5.55	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Styrene	ND		28.3	6.11	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
tert-Butylbenzene	ND		28.3	4.98	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Tetrachloroethene	ND		28.3	3.74	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Toluene	ND		28.3	5.21	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
trans-1,2-Dichloroethene	ND		28.3	2.94	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
trans-1,3-Dichloropropene	ND		28.3	9.96	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Trichloroethene	ND		28.3	2.04	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Trichlorofluoromethane	ND	*	56.6	5.43	ug/Sample		10/23/19 10:46	10/25/19 17:45	1
Vinyl chloride	ND		56.6	13.6	ug/Sample		10/23/19 10:46	10/25/19 17:45	1

Client Sample ID: M-2985 R3 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-22

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		82.8	82.8	ug/Sample		10/23/19 10:46	10/25/19 17:45	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*29.2*	*T J*	*ug/Sample*		*1.88*		*10/23/19 10:46*	*10/25/19 17:45*	*1*
Benzene, 1-[(2-chloroethyl)sulfonyl] -4-nitro-	*33.5*	*T J N*	*ug/Sample*		*2.06*	*6461-63-8*	*10/23/19 10:46*	*10/25/19 17:45*	*1*
Cyclohexane	*50.1*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:46*	*10/25/19 17:45*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:46*	*10/25/19 17:45*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:46*	*10/25/19 17:45*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:46*	*10/25/19 17:45*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:46*	*10/25/19 17:45*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		11300	5660	ug/Sample		10/23/19 10:46	11/14/19 21:31	1
Hydrogen Fluoride	ND		2490	1130	ug/Sample		10/23/19 10:46	11/14/19 14:35	20

Client Sample ID: M-2986 R3 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		29.1	3.85	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,1,3,3-Pentafluorobutane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,1-Trichloroethane	ND		29.1	4.20	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		58.3	11.5	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,1-Trifluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,2,2-Tetrachloroethane	ND		29.1	5.59	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		58.3	3.26	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,2-trichloro-1-fluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1,2-Trichloroethane	ND		29.1	3.03	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-Dichloro-1-fluoroethane	ND		58.3	29.1	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-dichloro-2,2-difluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-dichloro-2,2-difluoroethene	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-Dichloroethane	ND		29.1	3.50	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-Dichloroethene	ND		29.1	4.31	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-Dichloropropene	ND		29.1	3.15	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,1-Difluoroethene	ND		583	583	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2,2-trichloro-1,1-difluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2,3-Trichlorobenzene	ND		29.1	9.32	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2,3-Trichloropropane	ND		29.1	7.22	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2,4-Trichlorobenzene	ND		29.1	9.79	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2,4-Trimethylbenzene	ND		29.1	6.06	ug/Sample		10/23/19 10:46	10/25/19 18:09	1

Client Sample ID: M-2986 R3 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-23

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromo-3-Chloropropane	ND		58.3	10.3	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2-Dibromoethane (EDB)	ND		29.1	3.85	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2-dichloro-1,1-difluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2-Dichlorobenzene	ND		29.1	5.13	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2-Dichloroethane	ND		29.1	4.89	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,2-Dichloropropane	ND		29.1	2.91	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,3,5-Trimethylbenzene	ND		29.1	6.06	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,3-Dichlorobenzene	ND		29.1	5.01	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,3-Dichloropropane	ND		29.1	3.26	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1,4-Dichlorobenzene	ND		29.1	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
1-Chloro-1,1-difluoroethane	ND		58.3	5.94	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2,2-Dichloropropane	ND		29.1	8.51	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2-Butanone (MEK)	ND		117	18.6	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		58.3	8.62	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2-Chloro-1,1,1-Trifluoroethane	ND		58.3	5.83	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2-Chlorotoluene	ND		29.1	5.48	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
2-Hexanone	ND		117	26.8	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Hexafluoropropylene oxide	ND		25.4	25.4	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
4-Chlorotoluene	ND		29.1	6.06	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
4-Isopropyltoluene	ND		29.1	7.81	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
4-Methyl-2-pentanone (MIBK)	ND		117	18.6	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Acetone	ND		117	68.8	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Benzene	ND		29.1	5.59	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Bromobenzene	ND		29.1	4.08	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Bromochloromethane	ND		29.1	6.53	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Bromodichloromethane	ND		29.1	5.01	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Bromoform	ND		29.1	8.86	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Bromomethane	ND	*	58.3	33.8	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Carbon disulfide	ND		29.1	7.22	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Carbon tetrachloride	ND		29.1	3.85	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Chlorobenzene	ND		29.1	4.20	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Chlorodibromomethane	ND		29.1	6.29	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Chloroethane	ND		58.3	12.8	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Chloroform	ND		29.1	3.38	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Chloromethane	ND		58.3	24.2	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
cis-1,2-Dichloroethene	ND		29.1	2.33	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
cis-1,3-Dichloropropene	ND		29.1	5.01	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Dibromomethane	ND		29.1	2.80	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Dichlorodifluoromethane	ND		58.3	10.3	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Ethylbenzene	ND		29.1	4.78	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		29.1	29.1	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Hexachlorobutadiene	ND		29.1	7.69	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		27.9	27.9	ug/Sample		10/23/19 10:46	10/25/19 18:09	1

Client Sample ID: M-2986 R3 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-23

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Isopropylbenzene	ND		29.1	4.08	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
m,p-Xylene	ND		58.3	4.78	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Methylene Chloride	ND		29.1	18.6	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Naphthalene	ND		29.1	14.0	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
n-Butylbenzene	ND		29.1	7.46	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
n-Propylbenzene	ND		29.1	6.29	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
o-Xylene	ND		29.1	3.03	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
sec-Butylbenzene	ND		29.1	5.71	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Styrene	ND		29.1	6.29	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
tert-Butylbenzene	ND		29.1	5.13	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Tetrachloroethene	ND		29.1	3.85	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Toluene	ND		29.1	5.36	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
trans-1,2-Dichloroethene	ND		29.1	3.03	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
trans-1,3-Dichloropropene	ND		29.1	10.3	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Trichloroethene	ND		29.1	2.10	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Trichlorofluoromethane	ND	*	58.3	5.59	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Vinyl chloride	ND		58.3	14.0	ug/Sample		10/23/19 10:46	10/25/19 18:09	1
Carbonyl Difluoride	ND		85.7	85.7	ug/Sample		10/23/19 10:46	10/25/19 18:09	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*30.5*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:46*	*10/25/19 18:09*	*1*
Cyclohexane	*40.9*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:46*	*10/25/19 18:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 160*	*10/23/19 10:46*	*10/25/19 18:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:46*	*10/25/19 18:09*	*1*
Dibromofluoromethane (Surr)	*88*		*62 - 134*	*10/23/19 10:46*	*10/25/19 18:09*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:46*	*10/25/19 18:09*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		11700	5830	ug/Sample		10/23/19 10:46	11/14/19 21:51	1
Hydrogen Fluoride	ND		2560	1170	ug/Sample		10/23/19 10:46	11/14/19 15:37	20

Client Sample ID: M-2987 R3 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-24

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.2	3.45	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,1,3,3-Pentafluorobutane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,1-Trichloroethane	ND		26.2	3.77	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.3	10.4	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,1-Trifluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,2,2-Tetrachloroethane	ND		26.2	5.02	ug/Sample		10/23/19 10:46	10/25/19 18:34	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2987 R3 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-24

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.3	2.93	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,2-trichloro-1-fluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1,2-Trichloroethane	ND		26.2	2.72	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-Dichloro-1-fluoroethane	ND		52.3	26.2	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-dichloro-2,2-difluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-dichloro-2,2-difluoroethene	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-Dichloroethane	ND		26.2	3.14	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-Dichloroethene	ND		26.2	3.87	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-Dichloropropene	ND		26.2	2.82	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,1-Difluoroethene	ND		523	523	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2,3-Trichlorobenzene	ND		26.2	8.37	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2,3-Trichloropropane	ND		26.2	6.49	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2,4-Trichlorobenzene	ND		26.2	8.79	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2,4-Trimethylbenzene	**15.4**	**J**	26.2	5.44	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-Dibromo-3-Chloropropane	ND		52.3	9.21	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-Dibromoethane (EDB)	ND		26.2	3.45	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-dichloro-1,1-difluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-Dichlorobenzene	ND		26.2	4.60	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-Dichloroethane	ND		26.2	4.39	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,2-Dichloropropane	ND		26.2	2.62	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,3,5-Trimethylbenzene	ND		26.2	5.44	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,3-Dichlorobenzene	ND		26.2	4.50	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,3-Dichloropropane	ND		26.2	2.93	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1,4-Dichlorobenzene	ND		26.2	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
1-Chloro-1,1-difluoroethane	ND		52.3	5.34	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2,2-Dichloropropane	ND		26.2	7.64	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2-Butanone (MEK)	ND		105	16.7	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.3	7.74	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.3	5.23	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2-Chlorotoluene	ND		26.2	4.92	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
2-Hexanone	ND		105	24.1	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Hexafluoropropylene oxide	ND		22.9	22.9	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
4-Chlorotoluene	ND		26.2	5.44	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
4-Isopropyltoluene	ND		26.2	7.01	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
4-Methyl-2-pentanone (MIBK)	ND		105	16.7	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Acetone	ND		105	61.7	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Benzene	ND		26.2	5.02	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Bromobenzene	ND		26.2	3.66	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Bromochloromethane	ND		26.2	5.86	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Bromodichloromethane	ND		26.2	4.50	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Bromoform	ND		26.2	7.95	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Bromomethane	ND	*	52.3	30.3	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Carbon disulfide	ND		26.2	6.49	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Carbon tetrachloride	ND		26.2	3.45	ug/Sample		10/23/19 10:46	10/25/19 18:34	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2987 R3 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-24

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		26.2	3.77	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Chlorodibromomethane	ND		26.2	5.65	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Chloroethane	ND		52.3	11.5	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Chloroform	ND		26.2	3.03	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Chloromethane	ND		52.3	21.8	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
cis-1,2-Dichloroethene	ND		26.2	2.09	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
cis-1,3-Dichloropropene	ND		26.2	4.50	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Dibromomethane	ND		26.2	2.51	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Dichlorodifluoromethane	ND		52.3	9.21	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Ethylbenzene	ND		26.2	4.29	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.2	26.2	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Hexachlorobutadiene	ND		26.2	6.90	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		25.1	25.1	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Isopropylbenzene	ND		26.2	3.66	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
m,p-Xylene	ND		52.3	4.29	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Methylene Chloride	ND		26.2	16.7	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Naphthalene	ND		26.2	12.6	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
n-Butylbenzene	ND		26.2	6.70	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
n-Propylbenzene	ND		26.2	5.65	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
o-Xylene	ND		26.2	2.72	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
sec-Butylbenzene	ND		26.2	5.13	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Styrene	ND		26.2	5.65	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
tert-Butylbenzene	ND		26.2	4.60	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Tetrachloroethene	ND		26.2	3.45	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Toluene	ND		26.2	4.81	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
trans-1,2-Dichloroethene	ND		26.2	2.72	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
trans-1,3-Dichloropropene	ND		26.2	9.21	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Trichloroethene	ND		26.2	1.88	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Trichlorofluoromethane	ND	*	52.3	5.02	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Vinyl chloride	ND		52.3	12.6	ug/Sample		10/23/19 10:46	10/25/19 18:34	1
Carbonyl Difluoride	ND		76.9	76.9	ug/Sample		10/23/19 10:46	10/25/19 18:34	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*29.9*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:46*	*10/25/19 18:34*	*1*
Cyclohexane	*39.7*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:46*	*10/25/19 18:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:46*	*10/25/19 18:34*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:46*	*10/25/19 18:34*	*1*
Dibromofluoromethane (Surr)	*87*		*62 - 134*	*10/23/19 10:46*	*10/25/19 18:34*	*1*
Toluene-d8 (Surr)	*100*		*71 - 139*	*10/23/19 10:46*	*10/25/19 18:34*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10600	5280	ug/Sample		10/23/19 10:46	11/14/19 22:12	1
Hydrogen Fluoride	ND		2300	1050	ug/Sample		10/23/19 10:46	11/14/19 15:58	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: MeOH Prep

Analyte	RL	MDL	Units
1,1,1,2-Tetrachloroethane	2.50	0.330	ug/Sample
1,1,1,3,3-Pentafluorobutane	5.00	0.500	ug/Sample
1,1,1-Trichloroethane	2.50	0.360	ug/Sample
1,1,1-Trifluoro-2,2-dichloroethane	5.00	0.990	ug/Sample
1,1,1-Trifluoroethane	5.00	0.500	ug/Sample
1,1,2,2-Tetrachloroethane	2.50	0.480	ug/Sample
1,1,2-Trichloro-1,2,2-trifluoroethane	5.00	0.280	ug/Sample
1,1,2-trichloro-1-fluoroethane	5.00	0.500	ug/Sample
1,1,2-Trichloroethane	2.50	0.260	ug/Sample
1,1-Dichloro-1-fluoroethane	5.00	2.50	ug/Sample
1,1-dichloro-2,2-difluoroethane	5.00	0.500	ug/Sample
1,1-dichloro-2,2-difluoroethene	5.00	0.500	ug/Sample
1,1-Dichloroethane	2.50	0.300	ug/Sample
1,1-Dichloroethene	2.50	0.370	ug/Sample
1,1-Dichloropropene	2.50	0.270	ug/Sample
1,1-Difluoroethene	50.0	50.0	ug/Sample
1,2,2-trichloro-1,1-difluoroethane	5.00	0.500	ug/Sample
1,2,3-Trichlorobenzene	2.50	0.800	ug/Sample
1,2,3-Trichloropropane	2.50	0.620	ug/Sample
1,2,4-Trichlorobenzene	2.50	0.840	ug/Sample
1,2,4-Trimethylbenzene	2.50	0.520	ug/Sample
1,2-Dibromo-3-Chloropropane	5.00	0.880	ug/Sample
1,2-Dibromoethane (EDB)	2.50	0.330	ug/Sample
1,2-dichloro-1,1-difluoroethane	5.00	0.500	ug/Sample
1,2-Dichlorobenzene	2.50	0.440	ug/Sample
1,2-Dichloroethane	2.50	0.420	ug/Sample
1,2-Dichloropropane	2.50	0.250	ug/Sample
1,3,5-Trimethylbenzene	2.50	0.520	ug/Sample
1,3-Dichlorobenzene	2.50	0.430	ug/Sample
1,3-Dichloropropane	2.50	0.280	ug/Sample
1,4-Dichlorobenzene	2.50	0.500	ug/Sample
1-Chloro-1,1-difluoroethane	5.00	0.510	ug/Sample
2,2-dichloro-1,1-difluoroethylmethyl ether	5.00	0.500	ug/Sample
2,2-Dichloropropane	2.50	0.730	ug/Sample
2-Butanone (MEK)	10.0	1.60	ug/Sample
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	5.00	0.740	ug/Sample
2-Chloro-1,1,1-Trifluoroethane	5.00	0.500	ug/Sample
2-Chlorotoluene	2.50	0.470	ug/Sample
2-Hexanone	10.0	2.30	ug/Sample
4-Chlorotoluene	2.50	0.520	ug/Sample
4-Isopropyltoluene	2.50	0.670	ug/Sample
4-Methyl-2-pentanone (MIBK)	10.0	1.60	ug/Sample
Acetone	10.0	5.90	ug/Sample
Benzene	2.50	0.480	ug/Sample
Bromobenzene	2.50	0.350	ug/Sample
Bromochloromethane	2.50	0.560	ug/Sample
Bromodichloromethane	2.50	0.430	ug/Sample
Bromoform	2.50	0.760	ug/Sample
Bromomethane	5.00	2.90	ug/Sample
Carbon disulfide	2.50	0.620	ug/Sample
Carbon tetrachloride	2.50	0.330	ug/Sample
Carbonyl Difluoride	10.0	10.0	ug/Sample

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Prep: MeOH Prep

Analyte	RL	MDL	Units
Chlorobenzene	2.50	0.360	ug/Sample
Chlorodibromomethane	2.50	0.540	ug/Sample
Chloroethane	5.00	1.10	ug/Sample
Chloroform	2.50	0.290	ug/Sample
Chloromethane	5.00	2.08	ug/Sample
cis-1,2-Dichloroethene	2.50	0.200	ug/Sample
cis-1,3-Dichloropropene	2.50	0.430	ug/Sample
Dibromomethane	2.50	0.240	ug/Sample
Dichlorodifluoromethane	5.00	0.880	ug/Sample
Ethylbenzene	2.50	0.410	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	2.50	2.50	ug/Sample
Hexachlorobutadiene	2.50	0.660	ug/Sample
Hexafluoropropylene oxide	2.50	2.50	ug/Sample
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	2.50	2.50	ug/Sample
Isopropylbenzene	2.50	0.350	ug/Sample
m,p-Xylene	5.00	0.410	ug/Sample
Methylene Chloride	2.50	1.60	ug/Sample
Naphthalene	2.50	1.20	ug/Sample
n-Butylbenzene	2.50	0.640	ug/Sample
n-Propylbenzene	2.50	0.540	ug/Sample
o-Xylene	2.50	0.260	ug/Sample
sec-Butylbenzene	2.50	0.490	ug/Sample
Styrene	2.50	0.540	ug/Sample
tert-Butylbenzene	2.50	0.440	ug/Sample
Tetrachloroethene	2.50	0.330	ug/Sample
Toluene	2.50	0.460	ug/Sample
trans-1,2-Dichloroethene	2.50	0.260	ug/Sample
trans-1,3-Dichloropropene	2.50	0.880	ug/Sample
Trichloroethene	2.50	0.180	ug/Sample
Trichlorofluoromethane	5.00	0.480	ug/Sample
Vinyl chloride	5.00	1.20	ug/Sample

Method: 9056 - Anions, Ion Chromatography

Prep: MeOH Prep

Analyte	RL	MDL	Units
Hydrogen Fluoride	11.0	5.00	ug/Sample
Total Fluorine	1000	500	ug/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (70-160)	BFB (57-152)	DBFM (62-134)	TOL (71-139)
140-17065-1	M-2964 R1 MM18 SCRUBBER	96	96	86	105
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1	96	94	89	102
140-17065-1 MS - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1	96	95	97	101
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1	83	98	61 X	101
140-17065-1 MSD - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1	93	93	84	103
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2	92	93	87	104
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2	97	93	87	101
140-17065-2 MS - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2	99	95	97	101
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2	97	95	88	101
140-17065-2 MSD - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2	95	98	95	100
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3	95	93	86	102
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3	90	95	88	99
140-17065-3 MS - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3	97	93	93	101
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3	94	94	84	99
140-17065-3 MSD - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3	97	97	97	101
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4	94	91	87	105
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPINGER #5	96	95	84	103
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPINGER #6	93	95	83	102
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPINGER #7	93	94	83	104
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPINGER #8	94	93	84	102
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPINGER #1	96	95	84	102
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPINGER #2	93	100	89	107
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3	91	96	83	104
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPINGER #4	92	94	82	102
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPINGER #5	96	94	81	103
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPINGER #6	95	95	85	102
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPINGER #7	95	95	83	104

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(70-160)	(57-152)	(62-134)	(71-139)
140-17065-16	M-2979 R2 MM18 SCRUBBER (	93	93	86	103
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1	92	97	89	104
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1	94	98	89	102
140-17065-17 MS - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1	96	99	96	101
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1	97	96	89	102
140-17065-17 MSD - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1	99	99	97	101
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2	96	94	83	102
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPINGER #3	91	94	79	103
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPINGER #4	98	94	86	104
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5	92	91	83	102
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPINGER #6	95	93	85	102
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPINGER #7	99	95	88	103
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPINGER #8	92	93	87	100
LCS 140-34633/1-A	Lab Control Sample	98	95	101	105
LCS 140-34633/1-A	Lab Control Sample	92	94	84	104
LCS 140-34636/1-A	Lab Control Sample	97	95	97	104
LCS 140-34636/1-A	Lab Control Sample	91	96	90	105
MB 140-34633/2-A	Method Blank	94	92	82	102
MB 140-34636/2-A	Method Blank	91	95	84	102

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-34633/2-A
Matrix: Air
Analysis Batch: 34666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		2.50	0.330	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,1,3,3-Pentafluorobutane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,1-Trichloroethane	ND		2.50	0.360	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		5.00	0.990	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,2,2-Tetrachloroethane	ND		2.50	0.480	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.00	0.280	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,2-trichloro-1-fluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1,2-Trichloroethane	ND		2.50	0.260	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-Dichloro-1-fluoroethane	ND		5.00	2.50	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-dichloro-2,2-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-dichloro-2,2-difluoroethene	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-Dichloroethane	ND		2.50	0.300	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-Dichloroethene	ND		2.50	0.370	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-Dichloropropene	ND		2.50	0.270	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,1-Difluoroethene	ND		50.0	50.0	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2,2-trichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2,3-Trichlorobenzene	ND		2.50	0.800	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2,3-Trichloropropane	ND		2.50	0.620	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2,4-Trichlorobenzene	ND		2.50	0.840	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2,4-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-Dibromo-3-Chloropropane	ND		5.00	0.880	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-Dibromoethane (EDB)	ND		2.50	0.330	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-dichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-Dichlorobenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-Dichloroethane	ND		2.50	0.420	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,2-Dichloropropane	ND		2.50	0.250	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,3,5-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,3-Dichlorobenzene	ND		2.50	0.430	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,3-Dichloropropane	ND		2.50	0.280	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1,4-Dichlorobenzene	ND		2.50	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
1-Chloro-1,1-difluoroethane	ND		5.00	0.510	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2,2-Dichloropropane	ND		2.50	0.730	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2-Butanone (MEK)	ND		10.0	1.60	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		5.00	0.740	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2-Chloro-1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2-Chlorotoluene	ND		2.50	0.470	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
2-Hexanone	ND		10.0	2.30	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Hexafluoropropylene oxide	ND		2.18	2.18	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
4-Chlorotoluene	ND		2.50	0.520	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
4-Isopropyltoluene	ND		2.50	0.670	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
4-Methyl-2-pentanone (MIBK)	ND		10.0	1.60	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Acetone	ND		10.0	5.90	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Benzene	ND		2.50	0.480	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Bromobenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Bromochloromethane	ND		2.50	0.560	ug/Sample		10/23/19 10:43	10/24/19 15:25	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-34633/2-A
Matrix: Air
Analysis Batch: 34666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		2.50	0.430	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Bromoform	ND		2.50	0.760	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Bromomethane	ND		5.00	2.90	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Carbon disulfide	ND		2.50	0.620	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Carbon tetrachloride	ND		2.50	0.330	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Chlorobenzene	ND		2.50	0.360	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Chlorodibromomethane	ND		2.50	0.540	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Chloroethane	ND		5.00	1.10	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Chloroform	ND		2.50	0.290	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Chloromethane	ND		5.00	2.08	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
cis-1,2-Dichloroethene	ND		2.50	0.200	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
cis-1,3-Dichloropropene	ND		2.50	0.430	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Dibromomethane	ND		2.50	0.240	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Dichlorodifluoromethane	ND		5.00	0.880	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Ethylbenzene	ND		2.50	0.410	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		2.50	2.50	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Hexachlorobutadiene	ND		2.50	0.660	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.40	2.40	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Isopropylbenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
m,p-Xylene	ND		5.00	0.410	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Methylene Chloride	ND		2.50	1.60	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Naphthalene	ND		2.50	1.20	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
n-Butylbenzene	ND		2.50	0.640	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
n-Propylbenzene	ND		2.50	0.540	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
o-Xylene	ND		2.50	0.260	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
sec-Butylbenzene	ND		2.50	0.490	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Styrene	ND		2.50	0.540	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
tert-Butylbenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Tetrachloroethene	ND		2.50	0.330	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Toluene	ND		2.50	0.460	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
trans-1,2-Dichloroethene	ND		2.50	0.260	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
trans-1,3-Dichloropropene	ND		2.50	0.880	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Trichloroethene	ND		2.50	0.180	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Trichlorofluoromethane	ND		5.00	0.480	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Vinyl chloride	ND		5.00	1.20	ug/Sample		10/23/19 10:43	10/24/19 15:25	1
Carbonyl Difluoride	ND		7.33	7.33	ug/Sample		10/23/19 10:43	10/24/19 15:25	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:43*	*10/24/19 15:25*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:43*	*10/24/19 15:25*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*10/23/19 10:43*	*10/24/19 15:25*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:43*	*10/24/19 15:25*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:43*	*10/24/19 15:25*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34633/1-A
Matrix: Air
Analysis Batch: 34666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	24.47		ug/Sample		98	80 - 138
1,1,1-Trichloroethane	25.0	23.14		ug/Sample		93	80 - 140
1,1,2,2-Tetrachloroethane	25.0	30.95		ug/Sample		124	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	27.42		ug/Sample		110	40 - 160
1,1,2-Trichloroethane	25.0	26.97		ug/Sample		108	80 - 126
1,1-Dichloroethane	25.0	28.17		ug/Sample		113	80 - 134
1,1-Dichloroethene	25.0	29.17		ug/Sample		117	65 - 147
1,1-Dichloropropene	25.0	28.64		ug/Sample		115	80 - 142
1,2,3-Trichlorobenzene	25.0	27.99		ug/Sample		112	70 - 135
1,2,3-Trichloropropane	25.0	28.81		ug/Sample		115	67 - 146
1,2,4-Trichlorobenzene	25.0	29.28		ug/Sample		117	75 - 129
1,2,4-Trimethylbenzene	25.0	23.34		ug/Sample		93	65 - 127
1,2-Dibromo-3-Chloropropane	25.0	27.90		ug/Sample		112	64 - 132
1,2-Dibromoethane (EDB)	25.0	28.80		ug/Sample		115	80 - 125
1,2-Dichlorobenzene	25.0	27.91		ug/Sample		112	74 - 136
1,2-Dichloroethane	25.0	27.66		ug/Sample		111	72 - 138
1,2-Dichloropropane	25.0	26.76		ug/Sample		107	80 - 129
1,3,5-Trimethylbenzene	25.0	31.40		ug/Sample		126	50 - 136
1,3-Dichlorobenzene	25.0	28.90		ug/Sample		116	80 - 132
1,3-Dichloropropane	25.0	26.74		ug/Sample		107	68 - 136
1,4-Dichlorobenzene	25.0	28.75		ug/Sample		115	78 - 134
2,2-Dichloropropane	25.0	32.49		ug/Sample		130	80 - 150
2-Butanone (MEK)	100	126.4		ug/Sample		126	36 - 160
2-Chlorotoluene	25.0	27.40		ug/Sample		110	61 - 130
2-Hexanone	100	144.1		ug/Sample		144	33 - 150
4-Chlorotoluene	25.0	28.82		ug/Sample		115	49 - 140
4-Isopropyltoluene	25.0	33.49		ug/Sample		134	64 - 134
4-Methyl-2-pentanone (MIBK)	100	140.4		ug/Sample		140	31 - 140
Acetone	100	108.0		ug/Sample		108	61 - 150
Benzene	25.0	26.36		ug/Sample		105	69 - 132
Bromobenzene	25.0	28.86		ug/Sample		115	78 - 127
Bromochloromethane	25.0	27.51		ug/Sample		110	80 - 127
Bromodichloromethane	25.0	24.99		ug/Sample		100	78 - 140
Bromoform	25.0	23.19		ug/Sample		93	61 - 150
Bromomethane	50.0	84.90	*	ug/Sample		170	30 - 120
Carbon disulfide	25.0	28.19		ug/Sample		113	34 - 150
Carbon tetrachloride	25.0	28.15		ug/Sample		113	80 - 137
Chlorobenzene	25.0	26.67		ug/Sample		107	64 - 142
Chlorodibromomethane	25.0	25.22		ug/Sample		101	72 - 146
Chloroethane	50.0	56.17		ug/Sample		112	20 - 120
Chloroform	25.0	26.04		ug/Sample		104	80 - 134
Chloromethane	50.0	53.05		ug/Sample		106	54 - 150
cis-1,2-Dichloroethene	25.0	25.44		ug/Sample		102	80 - 129
cis-1,3-Dichloropropene	25.0	28.24		ug/Sample		113	80 - 138
Dibromomethane	25.0	27.25		ug/Sample		109	80 - 130
Dichlorodifluoromethane	50.0	61.79		ug/Sample		124	24 - 150
Dimethyl carbonate	99.9	133.5		ug/Sample		134	
Ethylbenzene	25.0	29.67		ug/Sample		119	74 - 136

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34633/1-A
Matrix: Air
Analysis Batch: 34666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	25.0	30.98		ug/Sample		124	77 - 146
Isopropylbenzene	25.0	31.20		ug/Sample		125	53 - 150
m,p-Xylene	25.0	29.45		ug/Sample		118	55 - 148
Methylene Chloride	25.0	22.83		ug/Sample		91	72 - 136
Naphthalene	25.0	31.96		ug/Sample		128	45 - 141
n-Butylbenzene	25.0	34.21		ug/Sample		137	61 - 137
n-Propylbenzene	25.0	29.29		ug/Sample		117	44 - 144
o-Xylene	25.0	29.07		ug/Sample		116	65 - 140
sec-Butylbenzene	25.0	31.81		ug/Sample		127	64 - 132
Styrene	25.0	29.92		ug/Sample		120	56 - 145
tert-Butylbenzene	25.0	28.99		ug/Sample		116	72 - 128
Tetrachloroethene	25.0	29.83		ug/Sample		119	80 - 134
Toluene	25.0	26.46		ug/Sample		106	68 - 123
trans-1,2-Dichloroethene	25.0	28.51		ug/Sample		114	76 - 140
trans-1,3-Dichloropropene	25.0	29.63		ug/Sample		119	78 - 138
Trichloroethene	25.0	28.12		ug/Sample		112	80 - 136
Trichlorofluoromethane	50.0	77.26	*	ug/Sample		155	46 - 121
Vinyl chloride	50.0	39.99		ug/Sample		80	65 - 160

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 160*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*
Dibromofluoromethane (Surr)	*101*		*62 - 134*
Toluene-d8 (Surr)	*105*		*71 - 139*

Lab Sample ID: LCS 140-34633/1-A
Matrix: Air
Analysis Batch: 34666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	25.0	26.49		ug/Sample		106	50 - 150
Methyl 2-methoxytetrafluoropropionate	24.9	24.48		ug/Sample		98	70 - 130
Methyl undecafluoro-2-methyl-3-oxahexanoate	24.9	28.94		ug/Sample		116	

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*
Dibromofluoromethane (Surr)	*84*		*62 - 134*
Toluene-d8 (Surr)	*104*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-17065-1 MS
Matrix: Air
Analysis Batch: 34698

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		695	811.4		ug/Sample		117	50 - 150
Methyl 2-methoxytetrafluoropropionate	ND		693	713.8		ug/Sample		103	70 - 130
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		693	723.2		ug/Sample		104	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*
Dibromofluoromethane (Surr)	*89*		*62 - 134*
Toluene-d8 (Surr)	*102*		*71 - 139*

Lab Sample ID: 140-17065-1 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		695	883.1		ug/Sample		127	50 - 150	8	30
Methyl 2-methoxytetrafluoropropionate	ND		693	606.7		ug/Sample		87	70 - 130	16	30
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		693	845.7		ug/Sample		122		16	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*70 - 160*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*
Dibromofluoromethane (Surr)	*61*	*X*	*62 - 134*
Toluene-d8 (Surr)	*101*		*71 - 139*

Lab Sample ID: 140-17065-2 MS
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		544	640.8		ug/Sample		118	50 - 150
Methyl 2-methoxytetrafluoropropionate	ND		542	570.8		ug/Sample		105	70 - 130
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		542	671.3		ug/Sample		124	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*
Dibromofluoromethane (Surr)	*87*		*62 - 134*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-17065-2 MS
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*101*		*71 - 139*

Lab Sample ID: 140-17065-2 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		544	577.9		ug/Sample		106	50 - 150	10	30
Methyl 2-methoxytetrafluoropropionate	ND		542	560.3		ug/Sample		103	70 - 130	2	30
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		542	620.2		ug/Sample		114		8	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*
Dibromofluoromethane (Surr)	*88*		*62 - 134*
Toluene-d8 (Surr)	*101*		*71 - 139*

Lab Sample ID: 140-17065-3 MS
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		366	360.0		ug/Sample		98	50 - 150
Methyl 2-methoxytetrafluoropropionate	ND		365	371.9		ug/Sample		102	70 - 130
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		365	388.9		ug/Sample		107	

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 160*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*
Dibromofluoromethane (Surr)	*88*		*62 - 134*
Toluene-d8 (Surr)	*99*		*71 - 139*

Lab Sample ID: 140-17065-3 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		366	358.4		ug/Sample		98	50 - 150	0	30
Methyl 2-methoxytetrafluoropropionate	ND		365	376.9		ug/Sample		103	70 - 130	1	30

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-17065-3 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		365	389.7		ug/Sample		107		0	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*
Dibromofluoromethane (Surr)	*84*		*62 - 134*
Toluene-d8 (Surr)	*99*		*71 - 139*

Lab Sample ID: MB 140-34636/2-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34636

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		2.50	0.330	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,1,3,3-Pentafluorobutane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,1-Trichloroethane	ND		2.50	0.360	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		5.00	0.990	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,2,2-Tetrachloroethane	ND		2.50	0.480	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.00	0.280	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,2-trichloro-1-fluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1,2-Trichloroethane	ND		2.50	0.260	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-Dichloro-1-fluoroethane	ND		5.00	2.50	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-dichloro-2,2-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-dichloro-2,2-difluoroethene	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-Dichloroethane	ND		2.50	0.300	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-Dichloroethene	ND		2.50	0.370	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-Dichloropropene	ND		2.50	0.270	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,1-Difluoroethene	ND		50.0	50.0	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2,2-trichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2,3-Trichlorobenzene	ND		2.50	0.800	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2,3-Trichloropropane	ND		2.50	0.620	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2,4-Trichlorobenzene	ND		2.50	0.840	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2,4-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-Dibromo-3-Chloropropane	ND		5.00	0.880	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-Dibromoethane (EDB)	ND		2.50	0.330	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-dichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-Dichlorobenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-Dichloroethane	ND		2.50	0.420	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,2-Dichloropropane	ND		2.50	0.250	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,3,5-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,3-Dichlorobenzene	ND		2.50	0.430	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,3-Dichloropropane	ND		2.50	0.280	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1,4-Dichlorobenzene	ND		2.50	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
1-Chloro-1,1-difluoroethane	ND		5.00	0.510	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-34636/2-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34636

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-Dichloropropane	ND		2.50	0.730	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2-Butanone (MEK)	ND		10.0	1.60	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		5.00	0.740	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2-Chloro-1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2-Chlorotoluene	ND		2.50	0.470	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
2-Hexanone	ND		10.0	2.30	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Hexafluoropropylene oxide	ND		2.18	2.18	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
4-Chlorotoluene	ND		2.50	0.520	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
4-Isopropyltoluene	ND		2.50	0.670	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
4-Methyl-2-pentanone (MIBK)	ND		10.0	1.60	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Acetone	ND		10.0	5.90	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Benzene	ND		2.50	0.480	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Bromobenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Bromochloromethane	ND		2.50	0.560	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Bromodichloromethane	ND		2.50	0.430	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Bromoform	ND		2.50	0.760	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Bromomethane	ND		5.00	2.90	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Carbon disulfide	ND		2.50	0.620	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Carbon tetrachloride	ND		2.50	0.330	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Chlorobenzene	ND		2.50	0.360	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Chlorodibromomethane	ND		2.50	0.540	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Chloroethane	ND		5.00	1.10	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Chloroform	ND		2.50	0.290	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Chloromethane	ND		5.00	2.08	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
cis-1,2-Dichloroethene	ND		2.50	0.200	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
cis-1,3-Dichloropropene	ND		2.50	0.430	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Dibromomethane	ND		2.50	0.240	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Dichlorodifluoromethane	ND		5.00	0.880	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Ethylbenzene	ND		2.50	0.410	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		2.50	2.50	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Hexachlorobutadiene	ND		2.50	0.660	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA)	ND		2.40	2.40	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Isopropylbenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
m,p-Xylene	ND		5.00	0.410	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Methylene Chloride	ND		2.50	1.60	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Naphthalene	ND		2.50	1.20	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
n-Butylbenzene	ND		2.50	0.640	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
n-Propylbenzene	ND		2.50	0.540	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
o-Xylene	ND		2.50	0.260	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
sec-Butylbenzene	ND		2.50	0.490	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Styrene	ND		2.50	0.540	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
tert-Butylbenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Tetrachloroethene	ND		2.50	0.330	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Toluene	ND		2.50	0.460	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
trans-1,2-Dichloroethene	ND		2.50	0.260	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
trans-1,3-Dichloropropene	ND		2.50	0.880	ug/Sample		10/23/19 10:46	10/25/19 12:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-34636/2-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34636

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		2.50	0.180	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Trichlorofluoromethane	ND		5.00	0.480	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Vinyl chloride	ND		5.00	1.20	ug/Sample		10/23/19 10:46	10/25/19 12:17	1
Carbonyl Difluoride	ND		7.33	7.33	ug/Sample		10/23/19 10:46	10/25/19 12:17	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Benzene, 4-methoxy-1-nitro-2-(trifluoromethyl)-	*2.838*	*T J N*	*ug/Sample*		*1.91*	*344-39-8*	*10/23/19 10:46*	*10/25/19 12:17*	*1*
Unknown	*2.695*	*T J*	*ug/Sample*		*1.97*		*10/23/19 10:46*	*10/25/19 12:17*	*1*
Unknown	*2.807*	*T J*	*ug/Sample*		*2.05*		*10/23/19 10:46*	*10/25/19 12:17*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*10/23/19 10:46*	*10/25/19 12:17*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:46*	*10/25/19 12:17*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:46*	*10/25/19 12:17*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:46*	*10/25/19 12:17*	*1*

Lab Sample ID: LCS 140-34636/1-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	22.60		ug/Sample		90	80 - 138
1,1,1-Trichloroethane	25.0	21.80		ug/Sample		87	80 - 140
1,1,2,2-Tetrachloroethane	25.0	27.43		ug/Sample		110	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	25.76		ug/Sample		103	40 - 160
1,1,2-Trichloroethane	25.0	24.91		ug/Sample		100	80 - 126
1,1-Dichloroethane	25.0	25.74		ug/Sample		103	80 - 134
1,1-Dichloroethene	25.0	27.64		ug/Sample		111	65 - 147
1,1-Dichloropropene	25.0	25.90		ug/Sample		104	80 - 142
1,2,3-Trichlorobenzene	25.0	24.53		ug/Sample		98	70 - 135
1,2,3-Trichloropropane	25.0	25.78		ug/Sample		103	67 - 146
1,2,4-Trichlorobenzene	25.0	24.96		ug/Sample		100	75 - 129
1,2,4-Trimethylbenzene	25.0	20.70		ug/Sample		83	65 - 127
1,2-Dibromo-3-Chloropropane	25.0	21.50		ug/Sample		86	64 - 132
1,2-Dibromoethane (EDB)	25.0	25.99		ug/Sample		104	80 - 125
1,2-Dichlorobenzene	25.0	24.89		ug/Sample		100	74 - 136
1,2-Dichloroethane	25.0	26.32		ug/Sample		105	72 - 138
1,2-Dichloropropane	25.0	25.74		ug/Sample		103	80 - 129
1,3,5-Trimethylbenzene	25.0	26.96		ug/Sample		108	50 - 136
1,3-Dichlorobenzene	25.0	25.39		ug/Sample		102	80 - 132
1,3-Dichloropropane	25.0	25.19		ug/Sample		101	68 - 136
1,4-Dichlorobenzene	25.0	24.61		ug/Sample		98	78 - 134
2,2-Dichloropropane	25.0	30.34		ug/Sample		121	80 - 150
2-Butanone (MEK)	100	107.5		ug/Sample		107	36 - 160
2-Chlorotoluene	25.0	24.12		ug/Sample		96	61 - 130
2-Hexanone	100	116.4		ug/Sample		116	33 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34636/1-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Chlorotoluene	25.0	24.68		ug/Sample		99	49 - 140
4-Isopropyltoluene	25.0	28.11		ug/Sample		112	64 - 134
4-Methyl-2-pentanone (MIBK)	100	117.9		ug/Sample		118	31 - 140
Acetone	100	86.49		ug/Sample		86	61 - 150
Benzene	25.0	25.09		ug/Sample		100	69 - 132
Bromobenzene	25.0	26.05		ug/Sample		104	78 - 127
Bromochloromethane	25.0	26.66		ug/Sample		107	80 - 127
Bromodichloromethane	25.0	24.29		ug/Sample		97	78 - 140
Bromoform	25.0	20.86		ug/Sample		83	61 - 150
Bromomethane	50.0	90.25	*	ug/Sample		181	30 - 120
Carbon disulfide	25.0	25.62		ug/Sample		102	34 - 150
Carbon tetrachloride	25.0	26.00		ug/Sample		104	80 - 137
Chlorobenzene	25.0	24.64		ug/Sample		99	64 - 142
Chlorodibromomethane	25.0	23.52		ug/Sample		94	72 - 146
Chloroethane	50.0	60.25		ug/Sample		120	20 - 120
Chloroform	25.0	24.46		ug/Sample		98	80 - 134
Chloromethane	50.0	50.64		ug/Sample		101	54 - 150
cis-1,2-Dichloroethene	25.0	24.31		ug/Sample		97	80 - 129
cis-1,3-Dichloropropene	25.0	25.95		ug/Sample		104	80 - 138
Dibromomethane	25.0	25.97		ug/Sample		104	80 - 130
Dichlorodifluoromethane	50.0	55.97		ug/Sample		112	24 - 150
Dimethyl carbonate	99.9	120.1		ug/Sample		120	
Ethylbenzene	25.0	26.80		ug/Sample		107	74 - 136
Hexachlorobutadiene	25.0	25.33		ug/Sample		101	77 - 146
Isopropylbenzene	25.0	27.33		ug/Sample		109	53 - 150
m,p-Xylene	25.0	25.87		ug/Sample		103	55 - 148
Methylene Chloride	25.0	23.52		ug/Sample		94	72 - 136
Naphthalene	25.0	27.41		ug/Sample		110	45 - 141
n-Butylbenzene	25.0	28.44		ug/Sample		114	61 - 137
n-Propylbenzene	25.0	25.40		ug/Sample		102	44 - 144
o-Xylene	25.0	26.72		ug/Sample		107	65 - 140
sec-Butylbenzene	25.0	27.31		ug/Sample		109	64 - 132
Styrene	25.0	26.88		ug/Sample		108	56 - 145
tert-Butylbenzene	25.0	24.99		ug/Sample		100	72 - 128
Tetrachloroethene	25.0	26.43		ug/Sample		106	80 - 134
Toluene	25.0	23.95		ug/Sample		96	68 - 123
trans-1,2-Dichloroethene	25.0	26.71		ug/Sample		107	76 - 140
trans-1,3-Dichloropropene	25.0	26.24		ug/Sample		105	78 - 138
Trichloroethene	25.0	26.37		ug/Sample		105	80 - 136
Trichlorofluoromethane	50.0	67.13	*	ug/Sample		134	46 - 121
Vinyl chloride	50.0	38.59		ug/Sample		77	65 - 160

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*
Dibromofluoromethane (Surr)	*97*		*62 - 134*
Toluene-d8 (Surr)	*104*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34636/1-A
Matrix: Air
Analysis Batch: 34698

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34636

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether			25.0	24.56		ug/Sample		98	50 - 150		
Methyl 2-methoxytetrafluoropropionate			24.9	24.82		ug/Sample		100	70 - 130		
Methyl undecafluoro-2-methyl-3-oxahexanoate			24.9	27.52		ug/Sample		110			

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*
Dibromofluoromethane (Surr)	*90*		*62 - 134*
Toluene-d8 (Surr)	*105*		*71 - 139*

Lab Sample ID: 140-17065-17 MS
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		829	972.5		ug/Sample		117	50 - 150		
Methyl 2-methoxytetrafluoropropionate	ND		827	801.4		ug/Sample		97	70 - 130		
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		826	871.4		ug/Sample		106			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*
4-Bromofluorobenzene (Surr)	*98*		*57 - 152*
Dibromofluoromethane (Surr)	*89*		*62 - 134*
Toluene-d8 (Surr)	*102*		*71 - 139*

Lab Sample ID: 140-17065-17 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		829	945.4		ug/Sample		114	50 - 150	3	30
Methyl 2-methoxytetrafluoropropionate	ND		827	868.2		ug/Sample		105	70 - 130	8	30
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		826	935.2		ug/Sample		113		7	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*
Dibromofluoromethane (Surr)	*89*		*62 - 134*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-17065-17 MSD
Matrix: Air
Analysis Batch: 34730

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34636

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	102		71 - 139

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA

Lab Sample ID: 140-17065-1 MS
Matrix: Air
Analysis Batch: 34990

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane - RA	ND		695	636.7	H	ug/Sample		92	80 - 138
1,1,1-Trichloroethane - RA	ND		695	592.2	H	ug/Sample		85	80 - 140
1,1,2,2-Tetrachloroethane - RA	ND		695	726.9	H	ug/Sample		105	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		695	725.0	H	ug/Sample		104	40 - 160
1,1,2-Trichloroethane - RA	ND		695	707.8	H	ug/Sample		102	80 - 126
1,1-Dichloroethane - RA	ND		695	750.1	H	ug/Sample		108	80 - 134
1,1-Dichloroethene - RA	ND		695	715.5	H	ug/Sample		103	65 - 147
1,1-Dichloropropene - RA	ND		695	720.3	H	ug/Sample		104	80 - 142
1,2,3-Trichlorobenzene - RA	ND		695	862.9	H	ug/Sample		124	70 - 135
1,2,3-Trichloropropane - RA	ND		695	718.4	H	ug/Sample		103	67 - 146
1,2,4-Trichlorobenzene - RA	ND		695	835.9	H	ug/Sample		120	75 - 129
1,2,4-Trimethylbenzene - RA	ND		695	598.9	H	ug/Sample		86	65 - 127
1,2-Dibromo-3-Chloropropane - RA	ND		695	659.2	H	ug/Sample		95	64 - 132
1,2-Dibromoethane (EDB) - RA	ND		695	717.5	H	ug/Sample		103	80 - 125
1,2-Dichlorobenzene - RA	ND		695	723.0	H	ug/Sample		104	74 - 136
1,2-Dichloroethane - RA	ND		695	750.7	H	ug/Sample		108	72 - 138
1,2-Dichloropropane - RA	ND		695	713.0	H	ug/Sample		103	80 - 129
1,3,5-Trimethylbenzene - RA	ND		695	778.1	H	ug/Sample		112	50 - 136
1,3-Dichlorobenzene - RA	ND		695	735.8	H	ug/Sample		106	80 - 132
1,3-Dichloropropane - RA	ND		695	684.6	H	ug/Sample		98	68 - 136
1,4-Dichlorobenzene - RA	ND		695	729.4	H	ug/Sample		105	78 - 134
2,2-Dichloropropane - RA	ND		695	799.2	H	ug/Sample		115	80 - 150
2-Butanone (MEK) - RA	ND		2780	3073	H	ug/Sample		110	36 - 160
2-Chlorotoluene - RA	ND		695	696.3	H	ug/Sample		100	61 - 130
2-Hexanone - RA	ND		2780	3491	H	ug/Sample		125	33 - 150
4-Chlorotoluene - RA	ND		695	721.1	H	ug/Sample		104	49 - 140
4-Isopropyltoluene - RA	ND		695	822.3	H	ug/Sample		118	64 - 134
4-Methyl-2-pentanone (MIBK) - RA	ND		2780	3562	H	ug/Sample		128	31 - 140
Acetone - RA	ND		2780	2409	H	ug/Sample		87	61 - 150
Benzene - RA	ND		695	675.9	H	ug/Sample		97	69 - 132
Bromobenzene - RA	ND		695	711.3	H	ug/Sample		102	78 - 127
Bromochloromethane - RA	ND		695	683.9	H	ug/Sample		98	80 - 127
Bromodichloromethane - RA	ND		695	655.3	H	ug/Sample		94	78 - 140
Bromoform - RA	ND		695	575.9	H	ug/Sample		83	61 - 150
Bromomethane - RA	ND	*	695	1750	H F1	ug/Sample		252	30 - 120
Carbon disulfide - RA	ND		695	687.9	H	ug/Sample		99	34 - 150
Carbon tetrachloride - RA	ND		695	716.0	H	ug/Sample		103	80 - 137

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-1 MS — **Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorobenzene - RA	ND		695	682.6	H	ug/Sample		98	64 - 142
Chlorodibromomethane - RA	ND		695	663.5	H	ug/Sample		95	72 - 146
Chloroethane - RA	ND		695	2009	H F1	ug/Sample		289	20 - 120
Chloroform - RA	ND		695	658.8	H	ug/Sample		95	80 - 134
Chloromethane - RA	ND		695	895.1	H	ug/Sample		129	54 - 150
cis-1,2-Dichloroethene - RA	ND		695	652.3	H	ug/Sample		94	80 - 129
cis-1,3-Dichloropropene - RA	ND		695	712.9	H	ug/Sample		103	80 - 138
Dibromomethane - RA	ND		695	692.1	H	ug/Sample		100	80 - 130
Dichlorodifluoromethane - RA	ND		695	998.6	H	ug/Sample		144	24 - 150
Dimethyl carbonate - RA	ND		2780	3485	H	ug/Sample		125	
Ethylbenzene - RA	ND		695	743.3	H	ug/Sample		107	74 - 136
Hexachlorobutadiene - RA	ND		695	833.7	H	ug/Sample		120	77 - 146
Isopropylbenzene - RA	ND		695	751.5	H	ug/Sample		108	53 - 150
m,p-Xylene - RA	ND		695	728.6	H	ug/Sample		105	55 - 148
Methylene Chloride - RA	ND		695	581.4	H	ug/Sample		84	72 - 136
Naphthalene - RA	ND		695	895.0	H	ug/Sample		129	45 - 141
n-Butylbenzene - RA	ND		695	835.1	H	ug/Sample		120	61 - 137
n-Propylbenzene - RA	ND		695	739.8	H	ug/Sample		106	44 - 144
o-Xylene - RA	ND		695	722.7	H	ug/Sample		104	65 - 140
sec-Butylbenzene - RA	ND		695	791.4	H	ug/Sample		114	64 - 132
Styrene - RA	ND		695	736.3	H	ug/Sample		106	56 - 145
tert-Butylbenzene - RA	ND		695	733.2	H	ug/Sample		105	72 - 128
Tetrachloroethene - RA	ND		695	757.9	H	ug/Sample		109	80 - 134
Toluene - RA	ND		695	661.1	H	ug/Sample		95	68 - 123
trans-1,2-Dichloroethene - RA	ND		695	739.3	H	ug/Sample		106	76 - 140
trans-1,3-Dichloropropene - RA	ND		695	746.7	H	ug/Sample		107	78 - 138
Trichloroethene - RA	ND		695	710.8	H	ug/Sample		102	80 - 136
Trichlorofluoromethane - RA	ND	*	695	761.1	H	ug/Sample		109	46 - 121
Vinyl chloride - RA	ND		695	1089	H	ug/Sample		157	65 - 160

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*96*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*95*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*97*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Lab Sample ID: 140-17065-1 MSD — **Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34908 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether - RA	ND		695	814.7	H	ug/Sample		117	50 - 150	0	30
Methyl 2-methoxytetrafluoropropionate - RA	ND		693	685.6	H	ug/Sample		99	70 - 130	4	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-1 MSD — **Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34908 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl undecafluoro-2-methyl-3-oxahexanoate - RA	ND		693	836.1	H	ug/Sample		121		14	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*93*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*93*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*84*		*62 - 134*
Toluene-d8 (Surr) - RA	*103*		*71 - 139*

Lab Sample ID: 140-17065-1 MSD — **Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane - RA	ND		695	613.1	H	ug/Sample		88	80 - 138	4	30
1,1,1-Trichloroethane - RA	ND		695	605.9	H	ug/Sample		87	80 - 140	2	30
1,1,2,2-Tetrachloroethane - RA	ND		695	699.9	H	ug/Sample		101	64 - 146	4	30
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		695	773.3	H	ug/Sample		111	40 - 160	6	30
1,1,2-Trichloroethane - RA	ND		695	681.2	H	ug/Sample		98	80 - 126	4	30
1,1-Dichloroethane - RA	ND		695	732.8	H	ug/Sample		105	80 - 134	2	30
1,1-Dichloroethene - RA	ND		695	705.7	H	ug/Sample		101	65 - 147	1	30
1,1-Dichloropropene - RA	ND		695	713.5	H	ug/Sample		103	80 - 142	1	30
1,2,3-Trichlorobenzene - RA	ND		695	734.0	H	ug/Sample		106	70 - 135	16	30
1,2,3-Trichloropropane - RA	ND		695	700.6	H	ug/Sample		101	67 - 146	3	30
1,2,4-Trichlorobenzene - RA	ND		695	750.4	H	ug/Sample		108	75 - 129	11	30
1,2,4-Trimethylbenzene - RA	ND		695	578.1	H	ug/Sample		83	65 - 127	4	30
1,2-Dibromo-3-Chloropropane - RA	ND		695	651.0	H	ug/Sample		94	64 - 132	1	30
1,2-Dibromoethane (EDB) - RA	ND		695	693.8	H	ug/Sample		100	80 - 125	3	30
1,2-Dichlorobenzene - RA	ND		695	677.7	H	ug/Sample		97	74 - 136	6	30
1,2-Dichloroethane - RA	ND		695	747.7	H	ug/Sample		108	72 - 138	0	30
1,2-Dichloropropane - RA	ND		695	695.5	H	ug/Sample		100	80 - 129	2	30
1,3,5-Trimethylbenzene - RA	ND		695	755.4	H	ug/Sample		109	50 - 136	3	30
1,3-Dichlorobenzene - RA	ND		695	697.6	H	ug/Sample		100	80 - 132	5	30
1,3-Dichloropropane - RA	ND		695	669.0	H	ug/Sample		96	68 - 136	2	30
1,4-Dichlorobenzene - RA	ND		695	683.7	H	ug/Sample		98	78 - 134	6	30
2,2-Dichloropropane - RA	ND		695	802.8	H	ug/Sample		115	80 - 150	0	30
2-Butanone (MEK) - RA	ND		2780	2893	H	ug/Sample		104	36 - 160	6	30
2-Chlorotoluene - RA	ND		695	677.8	H	ug/Sample		97	61 - 130	3	30
2-Hexanone - RA	ND		2780	3364	H	ug/Sample		121	33 - 150	4	30
4-Chlorotoluene - RA	ND		695	683.6	H	ug/Sample		98	49 - 140	5	30
4-Isopropyltoluene - RA	ND		695	796.8	H	ug/Sample		115	64 - 134	3	30
4-Methyl-2-pentanone (MIBK) - RA	ND		2780	3445	H	ug/Sample		124	31 - 140	3	30
Acetone - RA	ND		2780	2352	H	ug/Sample		85	61 - 150	2	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-1 MSD **Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air **Prep Type: Total/NA**
Analysis Batch: 34990 **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene - RA	ND		695	668.3	H	ug/Sample		96	69 - 132	1	30
Bromobenzene - RA	ND		695	683.5	H	ug/Sample		98	78 - 127	4	30
Bromochloromethane - RA	ND		695	695.2	H	ug/Sample		100	80 - 127	2	30
Bromodichloromethane - RA	ND		695	646.8	H	ug/Sample		93	78 - 140	1	30
Bromoform - RA	ND		695	558.9	H	ug/Sample		80	61 - 150	3	30
Bromomethane - RA	ND	*	695	1701	H F1	ug/Sample		245	30 - 120	3	30
Carbon disulfide - RA	ND		695	685.7	H	ug/Sample		99	34 - 150	0	30
Carbon tetrachloride - RA	ND		695	729.9	H	ug/Sample		105	80 - 137	2	30
Chlorobenzene - RA	ND		695	655.3	H	ug/Sample		94	64 - 142	4	30
Chlorodibromomethane - RA	ND		695	653.4	H	ug/Sample		94	72 - 146	2	30
Chloroethane - RA	ND		695	2811	H E F1 F2	ug/Sample		404	20 - 120	33	30
Chloroform - RA	ND		695	654.9	H	ug/Sample		94	80 - 134	1	30
Chloromethane - RA	ND		695	891.7	H	ug/Sample		128	54 - 150	0	30
cis-1,2-Dichloroethene - RA	ND		695	646.0	H	ug/Sample		93	80 - 129	1	30
cis-1,3-Dichloropropene - RA	ND		695	709.0	H	ug/Sample		102	80 - 138	1	30
Dibromomethane - RA	ND		695	698.3	H	ug/Sample		100	80 - 130	1	30
Dichlorodifluoromethane - RA	ND		695	987.2	H	ug/Sample		142	24 - 150	1	30
Dimethyl carbonate - RA	ND		2780	3531	H	ug/Sample		127		1	
Ethylbenzene - RA	ND		695	732.4	H	ug/Sample		105	74 - 136	1	30
Hexachlorobutadiene - RA	ND		695	740.0	H	ug/Sample		106	77 - 146	12	30
Isopropylbenzene - RA	ND		695	736.8	H	ug/Sample		106	53 - 150	2	30
m,p-Xylene - RA	ND		695	708.4	H	ug/Sample		102	55 - 148	3	30
Methylene Chloride - RA	ND		695	581.2	H	ug/Sample		84	72 - 136	0	30
Naphthalene - RA	ND		695	796.1	H	ug/Sample		114	45 - 141	12	30
n-Butylbenzene - RA	ND		695	791.1	H	ug/Sample		114	61 - 137	5	30
n-Propylbenzene - RA	ND		695	727.0	H	ug/Sample		105	44 - 144	2	30
o-Xylene - RA	ND		695	703.3	H	ug/Sample		101	65 - 140	3	30
sec-Butylbenzene - RA	ND		695	774.5	H	ug/Sample		111	64 - 132	2	30
Styrene - RA	ND		695	710.2	H	ug/Sample		102	56 - 145	4	30
tert-Butylbenzene - RA	ND		695	707.8	H	ug/Sample		102	72 - 128	4	30
Tetrachloroethene - RA	ND		695	731.0	H	ug/Sample		105	80 - 134	4	30
Toluene - RA	ND		695	652.2	H	ug/Sample		94	68 - 123	1	30
trans-1,2-Dichloroethene - RA	ND		695	703.7	H	ug/Sample		101	76 - 140	5	30
trans-1,3-Dichloropropene - RA	ND		695	734.6	H	ug/Sample		106	78 - 138	2	30
Trichloroethene - RA	ND		695	709.5	H	ug/Sample		102	80 - 136	0	30
Trichlorofluoromethane - RA	ND	*	695	771.3	H	ug/Sample		111	46 - 121	1	30
Vinyl chloride - RA	ND		695	1070	H	ug/Sample		154	65 - 160	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*100*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*96*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*96*		*62 - 134*
Toluene-d8 (Surr) - RA	*104*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-2 MS
Matrix: Air
Analysis Batch: 34990

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane - RA	ND		544	489.2	H	ug/Sample		90	80 - 138
1,1,1-Trichloroethane - RA	ND		544	453.8	H	ug/Sample		83	80 - 140
1,1,2,2-Tetrachloroethane - RA	ND		544	562.8	H	ug/Sample		103	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		544	576.0	H	ug/Sample		106	40 - 160
1,1,2-Trichloroethane - RA	ND		544	527.6	H	ug/Sample		97	80 - 126
1,1-Dichloroethane - RA	ND		544	563.6	H	ug/Sample		104	80 - 134
1,1-Dichloroethene - RA	ND		544	510.4	H	ug/Sample		94	65 - 147
1,1-Dichloropropene - RA	ND		544	534.9	H	ug/Sample		98	80 - 142
1,2,3-Trichlorobenzene - RA	ND		544	594.1	H	ug/Sample		109	70 - 135
1,2,3-Trichloropropane - RA	ND		544	535.5	H	ug/Sample		98	67 - 146
1,2,4-Trichlorobenzene - RA	ND		544	589.2	H	ug/Sample		108	75 - 129
1,2,4-Trimethylbenzene - RA	ND		544	449.5	H	ug/Sample		83	65 - 127
1,2-Dibromo-3-Chloropropane - RA	ND		544	495.3	H	ug/Sample		91	64 - 132
1,2-Dibromoethane (EDB) - RA	ND		544	551.3	H	ug/Sample		101	80 - 125
1,2-Dichlorobenzene - RA	ND		544	542.6	H	ug/Sample		100	74 - 136
1,2-Dichloroethane - RA	ND		544	579.3	H	ug/Sample		107	72 - 138
1,2-Dichloropropane - RA	ND		544	556.0	H	ug/Sample		102	80 - 129
1,3,5-Trimethylbenzene - RA	ND		544	576.5	H	ug/Sample		106	50 - 136
1,3-Dichlorobenzene - RA	ND		544	555.7	H	ug/Sample		102	80 - 132
1,3-Dichloropropane - RA	ND		544	523.5	H	ug/Sample		96	68 - 136
1,4-Dichlorobenzene - RA	ND		544	543.0	H	ug/Sample		100	78 - 134
2,2-Dichloropropane - RA	ND		544	630.9	H	ug/Sample		116	80 - 150
2-Butanone (MEK) - RA	ND		2180	2408	H	ug/Sample		111	36 - 160
2-Chlorotoluene - RA	ND		544	521.5	H	ug/Sample		96	61 - 130
2-Hexanone - RA	ND		2180	2672	H	ug/Sample		123	33 - 150
4-Chlorotoluene - RA	ND		544	522.3	H	ug/Sample		96	49 - 140
4-Isopropyltoluene - RA	ND		544	604.4	H	ug/Sample		111	64 - 134
4-Methyl-2-pentanone (MIBK) - RA	ND		2180	2702	H	ug/Sample		124	31 - 140
Acetone - RA	ND		2180	1922	H	ug/Sample		88	61 - 150
Benzene - RA	ND		544	509.3	H	ug/Sample		94	69 - 132
Bromobenzene - RA	ND		544	538.1	H	ug/Sample		99	78 - 127
Bromochloromethane - RA	ND		544	537.0	H	ug/Sample		99	80 - 127
Bromodichloromethane - RA	ND		544	505.3	H	ug/Sample		93	78 - 140
Bromoform - RA	ND		544	453.5	H	ug/Sample		83	61 - 150
Bromomethane - RA	ND	*	544	1105	H F1	ug/Sample		203	30 - 120
Carbon disulfide - RA	ND		544	525.7	H	ug/Sample		97	34 - 150
Carbon tetrachloride - RA	ND		544	543.8	H	ug/Sample		100	80 - 137
Chlorobenzene - RA	ND		544	508.0	H	ug/Sample		93	64 - 142
Chlorodibromomethane - RA	ND		544	517.8	H	ug/Sample		95	72 - 146
Chloroethane - RA	ND		544	684.4	H F1	ug/Sample		126	20 - 120
Chloroform - RA	ND		544	514.4	H	ug/Sample		95	80 - 134
Chloromethane - RA	ND		544	631.6	H	ug/Sample		116	54 - 150
cis-1,2-Dichloroethene - RA	ND		544	493.2	H	ug/Sample		91	80 - 129
cis-1,3-Dichloropropene - RA	ND		544	556.8	H	ug/Sample		102	80 - 138
Dibromomethane - RA	ND		544	533.9	H	ug/Sample		98	80 - 130
Dichlorodifluoromethane - RA	ND		544	693.8	H	ug/Sample		128	24 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-2 MS — **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dimethyl carbonate - RA	ND		2170	2759	H	ug/Sample		127	
Ethylbenzene - RA	ND		544	548.9	H	ug/Sample		101	74 - 136
Hexachlorobutadiene - RA	ND		544	555.6	H	ug/Sample		102	77 - 146
Isopropylbenzene - RA	ND		544	557.2	H	ug/Sample		102	53 - 150
m,p-Xylene - RA	ND		544	533.9	H	ug/Sample		98	55 - 148
Methylene Chloride - RA	ND		544	469.8	H	ug/Sample		86	72 - 136
Naphthalene - RA	ND		544	677.4	H	ug/Sample		125	45 - 141
n-Butylbenzene - RA	ND		544	605.3	H	ug/Sample		111	61 - 137
n-Propylbenzene - RA	ND		544	538.7	H	ug/Sample		99	44 - 144
o-Xylene - RA	ND		544	544.8	H	ug/Sample		100	65 - 140
sec-Butylbenzene - RA	ND		544	576.6	H	ug/Sample		106	64 - 132
Styrene - RA	ND		544	564.0	H	ug/Sample		104	56 - 145
tert-Butylbenzene - RA	ND		544	536.9	H	ug/Sample		99	72 - 128
Tetrachloroethene - RA	ND		544	542.9	H	ug/Sample		100	80 - 134
Toluene - RA	ND		544	494.4	H	ug/Sample		91	68 - 123
trans-1,2-Dichloroethene - RA	ND		544	547.2	H	ug/Sample		101	76 - 140
trans-1,3-Dichloropropene - RA	ND		544	568.1	H	ug/Sample		104	78 - 138
Trichloroethene - RA	ND		544	533.7	H	ug/Sample		98	80 - 136
Trichlorofluoromethane - RA	ND	*	544	605.8	H	ug/Sample		111	46 - 121
Vinyl chloride - RA	ND		544	525.2	H	ug/Sample		97	65 - 160

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*99*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*95*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*97*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Lab Sample ID: 140-17065-2 MSD — **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane - RA	ND		544	474.7	H	ug/Sample		87	80 - 138	3	30
1,1,1-Trichloroethane - RA	ND		544	435.6	H	ug/Sample		80	80 - 140	4	30
1,1,2,2-Tetrachloroethane - RA	ND		544	551.1	H	ug/Sample		101	64 - 146	2	30
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		544	529.5	H	ug/Sample		97	40 - 160	8	30
1,1,2-Trichloroethane - RA	ND		544	531.2	H	ug/Sample		98	80 - 126	1	30
1,1-Dichloroethane - RA	ND		544	554.9	H	ug/Sample		102	80 - 134	2	30
1,1-Dichloroethene - RA	ND		544	502.8	H	ug/Sample		92	65 - 147	2	30
1,1-Dichloropropene - RA	ND		544	514.4	H	ug/Sample		95	80 - 142	4	30
1,2,3-Trichlorobenzene - RA	ND		544	550.9	H	ug/Sample		101	70 - 135	8	30
1,2,3-Trichloropropane - RA	ND		544	547.9	H	ug/Sample		101	67 - 146	2	30
1,2,4-Trichlorobenzene - RA	ND		544	557.0	H	ug/Sample		102	75 - 129	6	30
1,2,4-Trimethylbenzene - RA	ND		544	448.2	H	ug/Sample		82	65 - 127	0	30
1,2-Dibromo-3-Chloropropane - RA	ND		544	495.7	H	ug/Sample		91	64 - 132	0	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-2 MSD **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air **Prep Type: Total/NA**
Analysis Batch: 34990 **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB) - RA	ND		544	537.0	H	ug/Sample		99	80 - 125	3	30
1,2-Dichlorobenzene - RA	ND		544	538.3	H	ug/Sample		99	74 - 136	1	30
1,2-Dichloroethane - RA	ND		544	597.6	H	ug/Sample		110	72 - 138	3	30
1,2-Dichloropropane - RA	ND		544	543.3	H	ug/Sample		100	80 - 129	2	30
1,3,5-Trimethylbenzene - RA	ND		544	577.4	H	ug/Sample		106	50 - 136	0	30
1,3-Dichlorobenzene - RA	ND		544	547.3	H	ug/Sample		101	80 - 132	2	30
1,3-Dichloropropane - RA	ND		544	520.1	H	ug/Sample		96	68 - 136	1	30
1,4-Dichlorobenzene - RA	ND		544	539.6	H	ug/Sample		99	78 - 134	1	30
2,2-Dichloropropane - RA	ND		544	576.8	H	ug/Sample		106	80 - 150	9	30
2-Butanone (MEK) - RA	ND		2180	2273	H	ug/Sample		105	36 - 160	6	30
2-Chlorotoluene - RA	ND		544	517.1	H	ug/Sample		95	61 - 130	1	30
2-Hexanone - RA	ND		2180	2563	H	ug/Sample		118	33 - 150	4	30
4-Chlorotoluene - RA	ND		544	526.5	H	ug/Sample		97	49 - 140	1	30
4-Isopropyltoluene - RA	ND		544	596.0	H	ug/Sample		110	64 - 134	1	30
4-Methyl-2-pentanone (MIBK) - RA	ND		2180	2628	H	ug/Sample		121	31 - 140	3	30
Acetone - RA	ND		2180	1896	H	ug/Sample		87	61 - 150	1	30
Benzene - RA	ND		544	501.9	H	ug/Sample		92	69 - 132	1	30
Bromobenzene - RA	ND		544	534.5	H	ug/Sample		98	78 - 127	1	30
Bromochloromethane - RA	ND		544	523.1	H	ug/Sample		96	80 - 127	3	30
Bromodichloromethane - RA	ND		544	506.0	H	ug/Sample		93	78 - 140	0	30
Bromoform - RA	ND		544	454.5	H	ug/Sample		84	61 - 150	0	30
Bromomethane - RA	ND	*	544	1031	H F1	ug/Sample		190	30 - 120	7	30
Carbon disulfide - RA	ND		544	506.3	H	ug/Sample		93	34 - 150	4	30
Carbon tetrachloride - RA	ND		544	522.1	H	ug/Sample		96	80 - 137	4	30
Chlorobenzene - RA	ND		544	501.3	H	ug/Sample		92	64 - 142	1	30
Chlorodibromomethane - RA	ND		544	505.7	H	ug/Sample		93	72 - 146	2	30
Chloroethane - RA	ND		544	638.3	H	ug/Sample		117	20 - 120	7	30
Chloroform - RA	ND		544	506.2	H	ug/Sample		93	80 - 134	2	30
Chloromethane - RA	ND		544	619.5	H	ug/Sample		114	54 - 150	2	30
cis-1,2-Dichloroethene - RA	ND		544	497.0	H	ug/Sample		91	80 - 129	1	30
cis-1,3-Dichloropropene - RA	ND		544	552.8	H	ug/Sample		102	80 - 138	1	30
Dibromomethane - RA	ND		544	522.6	H	ug/Sample		96	80 - 130	2	30
Dichlorodifluoromethane - RA	ND		544	679.2	H	ug/Sample		125	24 - 150	2	30
Dimethyl carbonate - RA	ND		2170	2648	H	ug/Sample		122		4	
Ethylbenzene - RA	ND		544	538.7	H	ug/Sample		99	74 - 136	2	30
Hexachlorobutadiene - RA	ND		544	552.5	H	ug/Sample		102	77 - 146	1	30
Isopropylbenzene - RA	ND		544	551.3	H	ug/Sample		101	53 - 150	1	30
m,p-Xylene - RA	ND		544	530.7	H	ug/Sample		98	55 - 148	1	30
Methylene Chloride - RA	ND		544	456.5	H	ug/Sample		84	72 - 136	3	30
Naphthalene - RA	ND		544	605.5	H	ug/Sample		111	45 - 141	11	30
n-Butylbenzene - RA	ND		544	588.3	H	ug/Sample		108	61 - 137	3	30
n-Propylbenzene - RA	ND		544	544.5	H	ug/Sample		100	44 - 144	1	30
o-Xylene - RA	ND		544	546.5	H	ug/Sample		101	65 - 140	0	30
sec-Butylbenzene - RA	ND		544	577.3	H	ug/Sample		106	64 - 132	0	30
Styrene - RA	ND		544	550.9	H	ug/Sample		101	56 - 145	2	30
tert-Butylbenzene - RA	ND		544	536.6	H	ug/Sample		99	72 - 128	0	30
Tetrachloroethene - RA	ND		544	529.6	H	ug/Sample		97	80 - 134	2	30
Toluene - RA	ND		544	487.1	H	ug/Sample		90	68 - 123	1	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-2 MSD — **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
trans-1,2-Dichloroethene - RA	ND		544	541.5	H	ug/Sample		100	76 - 140	1	30
trans-1,3-Dichloropropene - RA	ND		544	565.8	H	ug/Sample		104	78 - 138	0	30
Trichloroethene - RA	ND		544	520.1	H	ug/Sample		96	80 - 136	3	30
Trichlorofluoromethane - RA	ND	*	544	584.3	H	ug/Sample		107	46 - 121	4	30
Vinyl chloride - RA	ND		544	484.2	H	ug/Sample		89	65 - 160	8	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*95*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*98*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*95*		*62 - 134*
Toluene-d8 (Surr) - RA	*100*		*71 - 139*

Lab Sample ID: 140-17065-3 MS — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane - RA	ND		366	328.5	H	ug/Sample		90	80 - 138
1,1,1-Trichloroethane - RA	ND		366	297.5	H	ug/Sample		81	80 - 140
1,1,2,2-Tetrachloroethane - RA	ND		366	387.5	H	ug/Sample		106	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		366	378.3	H	ug/Sample		103	40 - 160
1,1,2-Trichloroethane - RA	ND		366	351.3	H	ug/Sample		96	80 - 126
1,1-Dichloroethane - RA	ND		366	367.0	H	ug/Sample		100	80 - 134
1,1-Dichloroethene - RA	ND		366	368.6	H	ug/Sample		101	65 - 147
1,1-Dichloropropene - RA	ND		366	350.6	H	ug/Sample		96	80 - 142
1,2,3-Trichlorobenzene - RA	ND		366	387.7	H	ug/Sample		106	70 - 135
1,2,3-Trichloropropane - RA	ND		366	360.5	H	ug/Sample		98	67 - 146
1,2,4-Trichlorobenzene - RA	ND		366	402.3	H	ug/Sample		110	75 - 129
1,2,4-Trimethylbenzene - RA	ND		366	308.4	H	ug/Sample		84	65 - 127
1,2-Dibromo-3-Chloropropane - RA	ND		366	337.8	H	ug/Sample		92	64 - 132
1,2-Dibromoethane (EDB) - RA	ND		366	366.5	H	ug/Sample		100	80 - 125
1,2-Dichlorobenzene - RA	ND		366	371.2	H	ug/Sample		101	74 - 136
1,2-Dichloroethane - RA	ND		366	408.3	H	ug/Sample		112	72 - 138
1,2-Dichloropropane - RA	ND		366	371.2	H	ug/Sample		101	80 - 129
1,3,5-Trimethylbenzene - RA	ND		366	393.1	H	ug/Sample		107	50 - 136
1,3-Dichlorobenzene - RA	ND		366	382.6	H	ug/Sample		104	80 - 132
1,3-Dichloropropane - RA	ND		366	351.2	H	ug/Sample		96	68 - 136
1,4-Dichlorobenzene - RA	ND		366	375.7	H	ug/Sample		103	78 - 134
2,2-Dichloropropane - RA	ND		366	421.0	H	ug/Sample		115	80 - 150
2-Butanone (MEK) - RA	ND		1460	1614	H	ug/Sample		110	36 - 160
2-Chlorotoluene - RA	ND		366	355.2	H	ug/Sample		97	61 - 130
2-Hexanone - RA	ND		1460	1818	H	ug/Sample		124	33 - 150
4-Chlorotoluene - RA	ND		366	367.6	H	ug/Sample		100	49 - 140
4-Isopropyltoluene - RA	ND		366	423.0	H	ug/Sample		116	64 - 134

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-3 MS
Matrix: Air
Analysis Batch: 34990

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Methyl-2-pentanone (MIBK) - RA	ND		1460	1810	H	ug/Sample		124	31 - 140
Acetone - RA	ND		1460	1332	H	ug/Sample		91	61 - 150
Benzene - RA	ND		366	346.3	H	ug/Sample		95	69 - 132
Bromobenzene - RA	ND		366	385.6	H	ug/Sample		105	78 - 127
Bromochloromethane - RA	ND		366	353.1	H	ug/Sample		96	80 - 127
Bromodichloromethane - RA	ND		366	347.1	H	ug/Sample		95	78 - 140
Bromoform - RA	ND		366	301.9	H	ug/Sample		82	61 - 150
Bromomethane - RA	ND	*	366	667.3	H F1	ug/Sample		182	30 - 120
Carbon disulfide - RA	ND		366	362.7	H	ug/Sample		99	34 - 150
Carbon tetrachloride - RA	ND		366	372.7	H	ug/Sample		102	80 - 137
Chlorobenzene - RA	ND		366	347.0	H	ug/Sample		95	64 - 142
Chlorodibromomethane - RA	ND		366	342.3	H	ug/Sample		93	72 - 146
Chloroethane - RA	ND		366	392.3	H	ug/Sample		107	20 - 120
Chloroform - RA	ND		366	342.7	H	ug/Sample		94	80 - 134
Chloromethane - RA	ND		366	402.6	H	ug/Sample		110	54 - 150
cis-1,2-Dichloroethene - RA	ND		366	344.6	H	ug/Sample		94	80 - 129
cis-1,3-Dichloropropene - RA	ND		366	387.7	H	ug/Sample		106	80 - 138
Dibromomethane - RA	ND		366	363.7	H	ug/Sample		99	80 - 130
Dichlorodifluoromethane - RA	ND		366	478.0	H	ug/Sample		131	24 - 150
Dimethyl carbonate - RA	ND		1460	1846	H	ug/Sample		126	
Ethylbenzene - RA	ND		366	377.1	H	ug/Sample		103	74 - 136
Hexachlorobutadiene - RA	ND		366	410.1	H	ug/Sample		112	77 - 146
Isopropylbenzene - RA	ND		366	392.7	H	ug/Sample		107	53 - 150
m,p-Xylene - RA	ND		366	374.0	H	ug/Sample		102	55 - 148
Methylene Chloride - RA	ND		366	315.0	H	ug/Sample		86	72 - 136
Naphthalene - RA	ND		366	428.7	H	ug/Sample		117	45 - 141
n-Butylbenzene - RA	ND		366	429.3	H	ug/Sample		117	61 - 137
n-Propylbenzene - RA	ND		366	367.6	H	ug/Sample		100	44 - 144
o-Xylene - RA	ND		366	375.8	H	ug/Sample		103	65 - 140
sec-Butylbenzene - RA	ND		366	398.2	H	ug/Sample		109	64 - 132
Styrene - RA	ND		366	391.7	H	ug/Sample		107	56 - 145
tert-Butylbenzene - RA	ND		366	366.4	H	ug/Sample		100	72 - 128
Tetrachloroethene - RA	ND		366	374.7	H	ug/Sample		102	80 - 134
Toluene - RA	ND		366	336.8	H	ug/Sample		92	68 - 123
trans-1,2-Dichloroethene - RA	ND		366	359.6	H	ug/Sample		98	76 - 140
trans-1,3-Dichloropropene - RA	ND		366	391.7	H	ug/Sample		107	78 - 138
Trichloroethene - RA	ND		366	369.0	H	ug/Sample		101	80 - 136
Trichlorofluoromethane - RA	ND	*	366	514.0	H F1	ug/Sample		140	46 - 121
Vinyl chloride - RA	ND		366	280.4	H	ug/Sample		77	65 - 160

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*97*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*93*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*93*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-3 MSD
Matrix: Air
Analysis Batch: 34990

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane - RA	ND		366	323.5	H	ug/Sample		88	80 - 138	2	30
1,1,1-Trichloroethane - RA	ND		366	297.0	H	ug/Sample		81	80 - 140	0	30
1,1,2,2-Tetrachloroethane - RA	ND		366	370.4	H	ug/Sample		101	64 - 146	5	30
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		366	382.3	H	ug/Sample		104	40 - 160	1	30
1,1,2-Trichloroethane - RA	ND		366	359.6	H	ug/Sample		98	80 - 126	2	30
1,1-Dichloroethane - RA	ND		366	380.5	H	ug/Sample		104	80 - 134	4	30
1,1-Dichloroethene - RA	ND		366	363.2	H	ug/Sample		99	65 - 147	1	30
1,1-Dichloropropene - RA	ND		366	358.2	H	ug/Sample		98	80 - 142	2	30
1,2,3-Trichlorobenzene - RA	ND		366	368.7	H	ug/Sample		101	70 - 135	5	30
1,2,3-Trichloropropane - RA	ND		366	362.9	H	ug/Sample		99	67 - 146	1	30
1,2,4-Trichlorobenzene - RA	ND		366	388.8	H	ug/Sample		106	75 - 129	3	30
1,2,4-Trimethylbenzene - RA	ND		366	308.5	H	ug/Sample		84	65 - 127	0	30
1,2-Dibromo-3-Chloropropane - RA	ND		366	314.0	H	ug/Sample		86	64 - 132	7	30
1,2-Dibromoethane (EDB) - RA	ND		366	359.0	H	ug/Sample		98	80 - 125	2	30
1,2-Dichlorobenzene - RA	ND		366	368.4	H	ug/Sample		101	74 - 136	1	30
1,2-Dichloroethane - RA	ND		366	396.9	H	ug/Sample		108	72 - 138	3	30
1,2-Dichloropropane - RA	ND		366	367.6	H	ug/Sample		100	80 - 129	1	30
1,3,5-Trimethylbenzene - RA	ND		366	395.0	H	ug/Sample		108	50 - 136	0	30
1,3-Dichlorobenzene - RA	ND		366	375.6	H	ug/Sample		103	80 - 132	2	30
1,3-Dichloropropane - RA	ND		366	348.4	H	ug/Sample		95	68 - 136	1	30
1,4-Dichlorobenzene - RA	ND		366	371.2	H	ug/Sample		101	78 - 134	1	30
2,2-Dichloropropane - RA	ND		366	427.5	H	ug/Sample		117	80 - 150	2	30
2-Butanone (MEK) - RA	ND		1460	1509	H	ug/Sample		103	36 - 160	7	30
2-Chlorotoluene - RA	ND		366	354.7	H	ug/Sample		97	61 - 130	0	30
2-Hexanone - RA	ND		1460	1686	H	ug/Sample		115	33 - 150	8	30
4-Chlorotoluene - RA	ND		366	369.6	H	ug/Sample		101	49 - 140	1	30
4-Isopropyltoluene - RA	ND		366	414.8	H	ug/Sample		113	64 - 134	2	30
4-Methyl-2-pentanone (MIBK) - RA	ND		1460	1722	H	ug/Sample		118	31 - 140	5	30
Acetone - RA	ND		1460	1266	H	ug/Sample		86	61 - 150	5	30
Benzene - RA	ND		366	342.7	H	ug/Sample		94	69 - 132	1	30
Bromobenzene - RA	ND		366	372.4	H	ug/Sample		102	78 - 127	3	30
Bromochloromethane - RA	ND		366	354.6	H	ug/Sample		97	80 - 127	0	30
Bromodichloromethane - RA	ND		366	347.3	H	ug/Sample		95	78 - 140	0	30
Bromoform - RA	ND		366	300.5	H	ug/Sample		82	61 - 150	0	30
Bromomethane - RA	ND	*	366	661.3	H F1	ug/Sample		181	30 - 120	1	30
Carbon disulfide - RA	ND		366	353.5	H	ug/Sample		97	34 - 150	3	30
Carbon tetrachloride - RA	ND		366	359.2	H	ug/Sample		98	80 - 137	4	30
Chlorobenzene - RA	ND		366	346.3	H	ug/Sample		95	64 - 142	0	30
Chlorodibromomethane - RA	ND		366	337.6	H	ug/Sample		92	72 - 146	1	30
Chloroethane - RA	ND		366	383.9	H	ug/Sample		105	20 - 120	2	30
Chloroform - RA	ND		366	343.0	H	ug/Sample		94	80 - 134	0	30
Chloromethane - RA	ND		366	404.6	H	ug/Sample		110	54 - 150	0	30
cis-1,2-Dichloroethene - RA	ND		366	346.8	H	ug/Sample		95	80 - 129	1	30
cis-1,3-Dichloropropene - RA	ND		366	372.3	H	ug/Sample		102	80 - 138	4	30
Dibromomethane - RA	ND		366	353.6	H	ug/Sample		97	80 - 130	3	30
Dichlorodifluoromethane - RA	ND		366	461.8	H	ug/Sample		126	24 - 150	3	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-3 MSD — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dimethyl carbonate - RA	ND		1460	1687	H	ug/Sample		115		9	
Ethylbenzene - RA	ND		366	371.6	H	ug/Sample		101	74 - 136	1	30
Hexachlorobutadiene - RA	ND		366	377.0	H	ug/Sample		103	77 - 146	8	30
Isopropylbenzene - RA	ND		366	379.3	H	ug/Sample		104	53 - 150	3	30
m,p-Xylene - RA	ND		366	361.7	H	ug/Sample		99	55 - 148	3	30
Methylene Chloride - RA	ND		366	314.8	H	ug/Sample		86	72 - 136	0	30
Naphthalene - RA	ND		366	405.0	H	ug/Sample		111	45 - 141	6	30
n-Butylbenzene - RA	ND		366	416.7	H	ug/Sample		114	61 - 137	3	30
n-Propylbenzene - RA	ND		366	369.1	H	ug/Sample		101	44 - 144	0	30
o-Xylene - RA	ND		366	368.6	H	ug/Sample		101	65 - 140	2	30
sec-Butylbenzene - RA	ND		366	396.9	H	ug/Sample		108	64 - 132	0	30
Styrene - RA	ND		366	389.3	H	ug/Sample		106	56 - 145	1	30
tert-Butylbenzene - RA	ND		366	367.5	H	ug/Sample		100	72 - 128	0	30
Tetrachloroethene - RA	ND		366	374.6	H	ug/Sample		102	80 - 134	0	30
Toluene - RA	ND		366	334.4	H	ug/Sample		91	68 - 123	1	30
trans-1,2-Dichloroethene - RA	ND		366	382.4	H	ug/Sample		104	76 - 140	6	30
trans-1,3-Dichloropropene - RA	ND		366	382.3	H	ug/Sample		104	78 - 138	2	30
Trichloroethene - RA	ND		366	364.1	H	ug/Sample		99	80 - 136	1	30
Trichlorofluoromethane - RA	ND	*	366	539.2	H F1	ug/Sample		147	46 - 121	5	30
Vinyl chloride - RA	ND		366	287.5	H	ug/Sample		79	65 - 160	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*97*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*97*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*97*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Lab Sample ID: 140-17065-17 MS — **Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane - RA	ND		829	741.0		ug/Sample		89	80 - 138
1,1,1-Trichloroethane - RA	ND		829	688.3		ug/Sample		83	80 - 140
1,1,2,2-Tetrachloroethane - RA	ND		829	818.6		ug/Sample		99	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		829	875.5		ug/Sample		106	40 - 160
1,1,2-Trichloroethane - RA	ND		829	817.8		ug/Sample		99	80 - 126
1,1-Dichloroethane - RA	ND		829	860.0		ug/Sample		104	80 - 134
1,1-Dichloroethene - RA	ND		829	811.2		ug/Sample		98	65 - 147
1,1-Dichloropropene - RA	ND		829	831.5		ug/Sample		100	80 - 142
1,2,3-Trichlorobenzene - RA	ND		829	886.1		ug/Sample		107	70 - 135
1,2,3-Trichloropropane - RA	ND		829	868.5		ug/Sample		105	67 - 146
1,2,4-Trichlorobenzene - RA	ND		829	865.5		ug/Sample		104	75 - 129
1,2,4-Trimethylbenzene - RA	ND		829	699.6		ug/Sample		84	65 - 127
1,2-Dibromo-3-Chloropropane - RA	ND		829	727.7		ug/Sample		88	64 - 132

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-17 MS **Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air **Prep Type: Total/NA**
Analysis Batch: 34990 **Prep Batch: 34636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB) - RA	ND		829	833.3		ug/Sample		101	80 - 125
1,2-Dichlorobenzene - RA	ND		829	812.2		ug/Sample		98	74 - 136
1,2-Dichloroethane - RA	ND		829	878.4		ug/Sample		106	72 - 138
1,2-Dichloropropane - RA	ND		829	839.3		ug/Sample		101	80 - 129
1,3,5-Trimethylbenzene - RA	ND		829	912.0		ug/Sample		110	50 - 136
1,3-Dichlorobenzene - RA	ND		829	834.3		ug/Sample		101	80 - 132
1,3-Dichloropropane - RA	ND		829	795.3		ug/Sample		96	68 - 136
1,4-Dichlorobenzene - RA	ND		829	808.5		ug/Sample		98	78 - 134
2,2-Dichloropropane - RA	ND		829	970.1		ug/Sample		117	80 - 150
2-Butanone (MEK) - RA	ND		3320	3577		ug/Sample		108	36 - 160
2-Chlorotoluene - RA	ND		829	824.4		ug/Sample		99	61 - 130
2-Hexanone - RA	ND		3320	3883		ug/Sample		117	33 - 150
4-Chlorotoluene - RA	ND		829	841.5		ug/Sample		102	49 - 140
4-Isopropyltoluene - RA	ND		829	937.8		ug/Sample		113	64 - 134
4-Methyl-2-pentanone (MIBK) - RA	ND		3320	4003		ug/Sample		121	31 - 140
Acetone - RA	ND		3320	2770		ug/Sample		84	61 - 150
Benzene - RA	ND		829	779.2		ug/Sample		94	69 - 132
Bromobenzene - RA	ND		829	806.2		ug/Sample		97	78 - 127
Bromochloromethane - RA	ND		829	826.4		ug/Sample		100	80 - 127
Bromodichloromethane - RA	ND		829	780.2		ug/Sample		94	78 - 140
Bromoform - RA	ND		829	677.0		ug/Sample		82	61 - 150
Bromomethane - RA	ND	*	829	1889	F1	ug/Sample		228	30 - 120
Carbon disulfide - RA	ND		829	804.4		ug/Sample		97	34 - 150
Carbon tetrachloride - RA	ND		829	834.0		ug/Sample		101	80 - 137
Chlorobenzene - RA	ND		829	768.9		ug/Sample		93	64 - 142
Chlorodibromomethane - RA	ND		829	781.9		ug/Sample		94	72 - 146
Chloroethane - RA	ND		829	1869	F1	ug/Sample		225	20 - 120
Chloroform - RA	ND		829	794.3		ug/Sample		96	80 - 134
Chloromethane - RA	ND		829	1046		ug/Sample		126	54 - 150
cis-1,2-Dichloroethene - RA	ND		829	758.4		ug/Sample		91	80 - 129
cis-1,3-Dichloropropene - RA	ND		829	854.1		ug/Sample		103	80 - 138
Dibromomethane - RA	ND		829	814.8		ug/Sample		98	80 - 130
Dichlorodifluoromethane - RA	ND		829	1147		ug/Sample		138	24 - 150
Dimethyl carbonate - RA	ND		3310	3990		ug/Sample		120	
Ethylbenzene - RA	ND		829	830.9		ug/Sample		100	74 - 136
Hexachlorobutadiene - RA	ND		829	860.0		ug/Sample		104	77 - 146
Isopropylbenzene - RA	ND		829	840.6		ug/Sample		101	53 - 150
m,p-Xylene - RA	ND		829	812.5		ug/Sample		98	55 - 148
Methylene Chloride - RA	ND		829	699.0		ug/Sample		84	72 - 136
Naphthalene - RA	ND		829	965.7		ug/Sample		116	45 - 141
n-Butylbenzene - RA	ND		829	926.4		ug/Sample		112	61 - 137
n-Propylbenzene - RA	ND		829	859.4		ug/Sample		104	44 - 144
o-Xylene - RA	ND		829	817.3		ug/Sample		99	65 - 140
sec-Butylbenzene - RA	ND		829	907.8		ug/Sample		110	64 - 132
Styrene - RA	ND		829	833.8		ug/Sample		101	56 - 145
tert-Butylbenzene - RA	ND		829	852.5		ug/Sample		103	72 - 128
Tetrachloroethene - RA	ND		829	832.5		ug/Sample		100	80 - 134
Toluene - RA	ND		829	761.5		ug/Sample		92	68 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-17 MS — **Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
trans-1,2-Dichloroethene - RA	ND		829	844.8		ug/Sample		102	76 - 140
trans-1,3-Dichloropropene - RA	ND		829	868.0		ug/Sample		105	78 - 138
Trichloroethene - RA	ND		829	821.7		ug/Sample		99	80 - 136
Trichlorofluoromethane - RA	ND	*	829	883.3		ug/Sample		107	46 - 121
Vinyl chloride - RA	ND		829	1228		ug/Sample		148	65 - 160

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*96*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*99*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*96*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Lab Sample ID: 140-17065-17 MSD — **Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34990 — **Prep Batch: 34636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane - RA	ND		829	731.7		ug/Sample		88	80 - 138	1	30
1,1,1-Trichloroethane - RA	ND		829	696.6		ug/Sample		84	80 - 140	1	30
1,1,2,2-Tetrachloroethane - RA	ND		829	840.7		ug/Sample		101	64 - 146	3	30
1,1,2-Trichloro-1,2,2-trifluoroethane - RA	ND		829	846.0		ug/Sample		102	40 - 160	3	30
1,1,2-Trichloroethane - RA	ND		829	801.0		ug/Sample		97	80 - 126	2	30
1,1-Dichloroethane - RA	ND		829	849.4		ug/Sample		102	80 - 134	1	30
1,1-Dichloroethene - RA	ND		829	807.2		ug/Sample		97	65 - 147	1	30
1,1-Dichloropropene - RA	ND		829	832.9		ug/Sample		100	80 - 142	0	30
1,2,3-Trichlorobenzene - RA	ND		829	893.8		ug/Sample		108	70 - 135	1	30
1,2,3-Trichloropropane - RA	ND		829	866.3		ug/Sample		105	67 - 146	0	30
1,2,4-Trichlorobenzene - RA	ND		829	923.5		ug/Sample		111	75 - 129	6	30
1,2,4-Trimethylbenzene - RA	ND		829	708.9		ug/Sample		86	65 - 127	1	30
1,2-Dibromo-3-Chloropropane - RA	ND		829	761.5		ug/Sample		92	64 - 132	5	30
1,2-Dibromoethane (EDB) - RA	ND		829	824.0		ug/Sample		99	80 - 125	1	30
1,2-Dichlorobenzene - RA	ND		829	843.1		ug/Sample		102	74 - 136	4	30
1,2-Dichloroethane - RA	ND		829	907.1		ug/Sample		109	72 - 138	3	30
1,2-Dichloropropane - RA	ND		829	820.3		ug/Sample		99	80 - 129	2	30
1,3,5-Trimethylbenzene - RA	ND		829	930.6		ug/Sample		112	50 - 136	2	30
1,3-Dichlorobenzene - RA	ND		829	878.7		ug/Sample		106	80 - 132	5	30
1,3-Dichloropropane - RA	ND		829	794.9		ug/Sample		96	68 - 136	0	30
1,4-Dichlorobenzene - RA	ND		829	859.8		ug/Sample		104	78 - 134	6	30
2,2-Dichloropropane - RA	ND		829	907.5		ug/Sample		109	80 - 150	7	30
2-Butanone (MEK) - RA	ND		3320	3629		ug/Sample		109	36 - 160	1	30
2-Chlorotoluene - RA	ND		829	839.2		ug/Sample		101	61 - 130	2	30
2-Hexanone - RA	ND		3320	4025		ug/Sample		121	33 - 150	4	30
4-Chlorotoluene - RA	ND		829	852.6		ug/Sample		103	49 - 140	1	30
4-Isopropyltoluene - RA	ND		829	973.9		ug/Sample		117	64 - 134	4	30

Method: 8260B - Volatile Organic Compounds (GC/MS) - RA (Continued)

Lab Sample ID: 140-17065-17 MSD **Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1**
Matrix: Air **Prep Type: Total/NA**
Analysis Batch: 34990 **Prep Batch: 34636**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Methyl-2-pentanone (MIBK) - RA	ND		3320	4087		ug/Sample		123	31 - 140	2	30
Acetone - RA	ND		3320	2858		ug/Sample		86	61 - 150	3	30
Benzene - RA	ND		829	777.2		ug/Sample		94	69 - 132	0	30
Bromobenzene - RA	ND		829	821.6		ug/Sample		99	78 - 127	2	30
Bromochloromethane - RA	ND		829	785.6		ug/Sample		95	80 - 127	5	30
Bromodichloromethane - RA	ND		829	781.9		ug/Sample		94	78 - 140	0	30
Bromoform - RA	ND		829	708.2		ug/Sample		85	61 - 150	4	30
Bromomethane - RA	ND	*	829	1878	F1	ug/Sample		227	30 - 120	1	30
Carbon disulfide - RA	ND		829	796.8		ug/Sample		96	34 - 150	1	30
Carbon tetrachloride - RA	ND		829	819.4		ug/Sample		99	80 - 137	2	30
Chlorobenzene - RA	ND		829	773.5		ug/Sample		93	64 - 142	1	30
Chlorodibromomethane - RA	ND		829	796.3		ug/Sample		96	72 - 146	2	30
Chloroethane - RA	ND		829	3585	E F1 F2	ug/Sample		432	20 - 120	63	30
Chloroform - RA	ND		829	779.8		ug/Sample		94	80 - 134	2	30
Chloromethane - RA	ND		829	1008		ug/Sample		122	54 - 150	4	30
cis-1,2-Dichloroethene - RA	ND		829	751.6		ug/Sample		91	80 - 129	1	30
cis-1,3-Dichloropropene - RA	ND		829	853.9		ug/Sample		103	80 - 138	0	30
Dibromomethane - RA	ND		829	810.4		ug/Sample		98	80 - 130	1	30
Dichlorodifluoromethane - RA	ND		829	1103		ug/Sample		133	24 - 150	4	30
Dimethyl carbonate - RA	ND		3310	4150		ug/Sample		125		4	
Ethylbenzene - RA	ND		829	845.2		ug/Sample		102	74 - 136	2	30
Hexachlorobutadiene - RA	ND		829	908.4		ug/Sample		110	77 - 146	5	30
Isopropylbenzene - RA	ND		829	872.2		ug/Sample		105	53 - 150	4	30
m,p-Xylene - RA	ND		829	844.4		ug/Sample		102	55 - 148	4	30
Methylene Chloride - RA	ND		829	687.9		ug/Sample		83	72 - 136	2	30
Naphthalene - RA	ND		829	972.4		ug/Sample		117	45 - 141	1	30
n-Butylbenzene - RA	ND		829	982.6		ug/Sample		119	61 - 137	6	30
n-Propylbenzene - RA	ND		829	886.9		ug/Sample		107	44 - 144	3	30
o-Xylene - RA	ND		829	840.9		ug/Sample		101	65 - 140	3	30
sec-Butylbenzene - RA	ND		829	940.7		ug/Sample		113	64 - 132	4	30
Styrene - RA	ND		829	857.1		ug/Sample		103	56 - 145	3	30
tert-Butylbenzene - RA	ND		829	861.1		ug/Sample		104	72 - 128	1	30
Tetrachloroethene - RA	ND		829	859.4		ug/Sample		104	80 - 134	3	30
Toluene - RA	ND		829	756.3		ug/Sample		91	68 - 123	1	30
trans-1,2-Dichloroethene - RA	ND		829	808.2		ug/Sample		97	76 - 140	4	30
trans-1,3-Dichloropropene - RA	ND		829	857.0		ug/Sample		103	78 - 138	1	30
Trichloroethene - RA	ND		829	835.0		ug/Sample		101	80 - 136	2	30
Trichlorofluoromethane - RA	ND	*	829	882.9		ug/Sample		107	46 - 121	0	30
Vinyl chloride - RA	ND		829	1082		ug/Sample		130	65 - 160	13	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr) - RA	*99*		*70 - 160*
4-Bromofluorobenzene (Surr) - RA	*99*		*57 - 152*
Dibromofluoromethane (Surr) - RA	*97*		*62 - 134*
Toluene-d8 (Surr) - RA	*101*		*71 - 139*

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: MB 140-34633/25-B
Matrix: Air
Analysis Batch: 35270

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10000	5000	ug/Sample		11/08/19 08:00	11/12/19 23:48	1

Lab Sample ID: LCS 140-34633/26-B
Matrix: Air
Analysis Batch: 35270

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	1000000	914600		ug/Sample		91	80 - 120

Lab Sample ID: 140-17065-1 MS
Matrix: Air
Analysis Batch: 35270

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	ND	F2 F1	2780000	2382000		ug/Sample		86	80 - 120

Lab Sample ID: 140-17065-1 MS
Matrix: Air
Analysis Batch: 35297

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	ND		29300	27840		ug/Sample		95	75 - 125

Lab Sample ID: 140-17065-1 MSD
Matrix: Air
Analysis Batch: 35270

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine	ND	F2 F1	2780000	2126000	F2 F1	ug/Sample		76	80 - 120	11	10

Lab Sample ID: 140-17065-1 MSD
Matrix: Air
Analysis Batch: 35297

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	ND		29300	27850		ug/Sample		95	75 - 125	0	20

Lab Sample ID: 140-17065-2 MS
Matrix: Air
Analysis Batch: 35270

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	ND		2180000	2002000		ug/Sample		92	80 - 120

Lab Sample ID: 140-17065-2 MS
Matrix: Air
Analysis Batch: 35297

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2
Prep Type: Total/NA
Prep Batch: 34633

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	ND		22900	21490		ug/Sample		94	75 - 125

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: 140-17065-2 MSD — **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35270 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine	ND		2180000	1977000		ug/Sample		91	80 - 120	1	10

Lab Sample ID: 140-17065-2 MSD — **Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35297 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	ND		22900	21550		ug/Sample		94	75 - 125	0	20

Lab Sample ID: 140-17065-3 MS — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35270 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	ND		1470000	1381000		ug/Sample		94	80 - 120

Lab Sample ID: 140-17065-3 MS — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35297 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	ND		15400	14310		ug/Sample		93	75 - 125

Lab Sample ID: 140-17065-3 MSD — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35270 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine	ND		1470000	1358000		ug/Sample		93	80 - 120	2	10

Lab Sample ID: 140-17065-3 MSD — **Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35297 — **Prep Batch: 34633**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	ND		15400	14430		ug/Sample		94	75 - 125	1	20

Lab Sample ID: MB 140-34636/13-B — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35360 — **Prep Batch: 34636**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10000	5000	ug/Sample		11/08/19 08:00	11/14/19 17:18	1

Lab Sample ID: LCS 140-34636/14-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35360 — **Prep Batch: 34636**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	1000000	906500		ug/Sample		91	80 - 120

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: LCSD 140-34636/15-B
Matrix: Air
Analysis Batch: 35360

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 34636

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine			1000000	910900		ug/Sample		91	80 - 120	0	10

Lab Sample ID: 140-17065-17 MS
Matrix: Air
Analysis Batch: 35360

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	ND		3320000	2977000		ug/Sample		90	80 - 120

Lab Sample ID: 140-17065-17 MSD
Matrix: Air
Analysis Batch: 35360

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1
Prep Type: Total/NA
Prep Batch: 34636

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine	ND		3320000	2971000		ug/Sample		90	80 - 120	0	10

Lab Sample ID: MB 140-35034/1-B
Matrix: Air
Analysis Batch: 35297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 35036

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		110000	50000	ug/Sample		11/06/19 12:36	11/13/19 16:20	1

Lab Sample ID: LCS 140-35297/4
Matrix: Air
Analysis Batch: 35297

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride			2630	2490		ug/Sample		95	90 - 110

Lab Sample ID: LCSD 140-35297/5
Matrix: Air
Analysis Batch: 35297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride			2630	2484		ug/Sample		94	90 - 110	0	20

Lab Sample ID: MB 140-35359/3
Matrix: Air
Analysis Batch: 35359

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		1100	500	ug/Sample			11/14/19 10:16	1

Lab Sample ID: LCS 140-35359/4
Matrix: Air
Analysis Batch: 35359

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride			2630	2508		ug/Sample		95	90 - 110

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: LCSD 140-35359/5
Matrix: Air
Analysis Batch: 35359

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride			2630	2489		ug/Sample		95	90 - 110	1	20

GC/MS VOA

Prep Batch: 34633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
MB 140-34633/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34633/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-1 MS - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-1 MSD - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MS - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MSD - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MS - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MSD - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	

Prep Batch: 34636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
MB 140-34636/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34636/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-17 MS - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-17 MSD - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	

Analysis Batch: 34666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633

GC/MS VOA (Continued)

Analysis Batch: 34666 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
MB 140-34633/2-A	Method Blank	Total/NA	Air	8260B	34633
LCS 140-34633/1-A	Lab Control Sample	Total/NA	Air	8260B	34633
LCS 140-34633/1-A	Lab Control Sample	Total/NA	Air	8260B	34633

Analysis Batch: 34698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
MB 140-34636/2-A	Method Blank	Total/NA	Air	8260B	34636
LCS 140-34636/1-A	Lab Control Sample	Total/NA	Air	8260B	34636
LCS 140-34636/1-A	Lab Control Sample	Total/NA	Air	8260B	34636
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633

Analysis Batch: 34730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636

Analysis Batch: 34908

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1 MSD - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633

Analysis Batch: 34990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1 MS - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633

GC/MS VOA (Continued)

Analysis Batch: 34990 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1 MSD - RA	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-2 MS - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-2 MSD - RA	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-3 MS - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-3 MSD - RA	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34633
140-17065-17 MS - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636
140-17065-17 MSD - RA	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	8260B	34636

HPLC/IC

Prep Batch: 34633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
MB 140-34633/25-B	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	

Prep Batch: 34636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	
MB 140-34636/13-B	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	MeOH Prep	
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	MeOH Prep	
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	

HPLC/IC (Continued)

Prep Batch: 34636 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	MeOH Prep	

Leach Batch: 35034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-35034/1-B	Method Blank	Total/NA	Air	MeOH Prep	

Prep Batch: 35036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-35034/1-B	Method Blank	Total/NA	Air	5050	35034

Prep Batch: 35100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
MB 140-34633/25-B	Method Blank	Total/NA	Air	5050	34633
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	5050	34633
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34633

Prep Batch: 35175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636
MB 140-34636/13-B	Method Blank	Total/NA	Air	5050	34636
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	5050	34636
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	5050	34636
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636

HPLC/IC (Continued)

Prep Batch: 35175 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	5050	34636

Analysis Batch: 35270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
MB 140-34633/25-B	Method Blank	Total/NA	Air	9056	35100
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	9056	35100
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35100

Analysis Batch: 35271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633

Analysis Batch: 35297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
MB 140-35034/1-B	Method Blank	Total/NA	Air	9056	35036
LCS 140-35297/4	Lab Control Sample	Total/NA	Air	9056	

HPLC/IC (Continued)

Analysis Batch: 35297 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-35297/5	Lab Control Sample Dup	Total/NA	Air	9056	
140-17065-1 MS	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-1 MSD	M-2964 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-2 MS	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-2 MSD	M-2965 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-3 MS	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-3 MSD	M-2966 R1 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633

Analysis Batch: 35359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34633
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	34636
MB 140-35359/3	Method Blank	Total/NA	Air	9056	
LCS 140-35359/4	Lab Control Sample	Total/NA	Air	9056	
LCSD 140-35359/5	Lab Control Sample Dup	Total/NA	Air	9056	

Analysis Batch: 35360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
MB 140-34636/13-B	Method Blank	Total/NA	Air	9056	35175
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	9056	35175
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	9056	35175
140-17065-17 MS	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175
140-17065-17 MSD	M-2980 R3 MM18 SCRUBBER OUTLET IMPING	Total/NA	Air	9056	35175

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 19:58	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 19:41	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 00:29	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 20:23	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 20:37	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 01:31	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 20:47	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 20:58	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	103.5 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 02:33	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2967 R1 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-4

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	134.53 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 21:12	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	134.53 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 21:19	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	134.53 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 12:58	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2968 R1 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-5

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	119.77 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 21:36	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	119.77 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 21:39	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	119.77 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 04:21	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2969 R1 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-6

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	132.60 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 22:01	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	132.60 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 22:00	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	132.60 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 04:41	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2970 R1 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-7

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	132.46 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 22:25	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	132.46 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 05:02	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	132.46 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/13/19 05:44	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2971 R1 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-8

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	82.51 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 22:50	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	82.51 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 05:23	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	82.51 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/13/19 06:04	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2972 R2 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-9

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	232.64 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 23:14	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	232.64 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 06:25	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	232.64 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 19:34	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2973 R2 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-10

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	245.56 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 12:42	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	245.56 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 06:46	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	245.56 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 20:40	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2974 R2 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-11

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	216.59 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 13:06	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	216.59 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 07:06	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	216.59 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 21:01	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2975 R2 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-12

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	143.52 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 13:31	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	143.52 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 08:13	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	143.52 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 21:22	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2976 R2 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-13

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	114.86 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 13:55	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	114.86 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 08:33	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	114.86 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 21:43	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2977 R2 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-14

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	118.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 14:20	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	118.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 08:54	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	118.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 22:03	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2978 R2 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-15

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	124.12 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 14:44	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	124.12 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 09:15	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	124.12 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 22:24	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2979 R2 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-16

Date Collected: 10/15/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.49 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 15:09	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	105.49 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/13/19 09:35	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	105.49 mL	34633	10/23/19 10:45	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 12:27	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 15:33	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 12:47	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 18:20	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2981 R3 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-18

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	269.92 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 15:58	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	269.92 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 13:08	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	269.92 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 19:26	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2982 R3 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-19

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	143.51 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 16:22	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	143.51 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 13:29	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	143.51 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100.6 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 19:47	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2983 R3 MM18 SCRUBBER OUTLET IMPINGER #4

Lab Sample ID: 140-17065-20

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	115.62 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 16:47	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	115.62 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 13:49	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	115.62 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 20:08	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2984 R3 MM18 SCRUBBER OUTLET IMPINGER #5

Lab Sample ID: 140-17065-21

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	122.03 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 17:20	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	122.03 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 14:12	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	122.03 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 20:28	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2985 R3 MM18 SCRUBBER OUTLET IMPINGER #6

Lab Sample ID: 140-17065-22

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	113.22 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 17:45	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	113.22 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 14:35	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	113.22 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 21:31	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2986 R3 MM18 SCRUBBER OUTLET IMPINGER #7

Lab Sample ID: 140-17065-23

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	116.53 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 18:09	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	116.53 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 15:37	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	116.53 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 21:51	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2987 R3 MM18 SCRUBBER OUTLET IMPINGER #8

Lab Sample ID: 140-17065-24

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.61 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 18:34	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.61 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 15:58	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.61 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	101 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 22:12	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-34633/25-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34633	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/12/19 23:48	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-34633/2-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 15:25	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-34636/13-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 17:18	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-34636/2-A

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 12:17	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-35034/1-B

Date Collected: N/A — **Matrix: Air**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	MeOH Prep			1 g	1 mL	35034	11/06/19 12:17	AKL	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35036	11/06/19 12:36	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 16:20	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-35359/3
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 10:16	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34633/1-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 13:22	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 13:47	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34633/26-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34633	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 00:08	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34636/14-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 17:39	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34636/1-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 11:04	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 11:28	BKK	TAL KNX
	Instrument ID: MK									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-35297/4
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 16:43	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-35359/4
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 10:39	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-34636/15-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 18:00	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-35297/5
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 17:05	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-35359/5
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 11:02	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1
Lab Sample ID: 140-17065-1 MS
Date Collected: 10/14/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34698	10/25/19 18:58	BKK	TAL KNX
	Instrument ID: MK									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1 MS

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep	RA		1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 12:59	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 00:50	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 17:28	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2964 R1 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-1 MSD

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 18:03	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34908	11/01/19 13:03	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 13:23	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 01:10	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	278.16 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 17:49	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2 MS

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 18:28	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2 MS

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep	RA		1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 13:48	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 01:52	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 18:09	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2965 R1 MM18 SCRUBBER OUTLET IMPINGER #2

Lab Sample ID: 140-17065-2 MSD

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 18:52	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 14:12	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 02:12	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	217.50 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 18:32	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3 MS

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 19:17	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 14:37	BKK	TAL KNX
	Instrument ID: MK									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3 MS

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	102.8 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 02:54	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 18:53	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2966 R1 MM18 SCRUBBER OUTLET IMPINGER #3

Lab Sample ID: 140-17065-3 MSD

Date Collected: 10/14/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 19:42	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 15:01	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 04:00	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	146.48 mL	34633	10/23/19 10:43	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 19:14	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17 MS

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 20:06	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 15:26	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 18:43	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Client Sample ID: M-2980 R3 MM18 SCRUBBER OUTLET IMPINGER #1

Lab Sample ID: 140-17065-17 MSD

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34730	10/26/19 20:31	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep	RA		1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Analysis	8260B	RA	1	100 uL	5 mL	34990	11/05/19 17:10	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	331.59 mL	34636	10/23/19 10:46	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 19:06	SMK	TAL KNX
	Instrument ID: 320									

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17065-1
Project/Site: MM-18 Field Samples (Task .60)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	12-31-19
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-19
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-19
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-01-20
Pennsylvania	NELAP	68-00576	12-31-19
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
9056	Anions, Ion Chromatography	SW846	TAL KNX
5050	Bomb Preparation Method for Solid Waste	SW846	TAL KNX
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 Field Samples (Task .60)

Job ID: 140-17065-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17065-1	M-2964 R1 MM18 SCRUBBER OUTLET IMPING #1	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-2	M-2965 R1 MM18 SCRUBBER OUTLET IMPING #2	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-3	M-2966 R1 MM18 SCRUBBER OUTLET IMPING #3	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-4	M-2967 R1 MM18 SCRUBBER OUTLET IMPING #4	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-5	M-2968 R1 MM18 SCRUBBER OUTLET IMPING #5	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-6	M-2969 R1 MM18 SCRUBBER OUTLET IMPING #6	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-7	M-2970 R1 MM18 SCRUBBER OUTLET IMPING #7	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-8	M-2971 R1 MM18 SCRUBBER OUTLET IMPING #8	Air	10/14/19 00:00	10/21/19 08:45	
140-17065-9	M-2972 R2 MM18 SCRUBBER OUTLET IMPING #1	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-10	M-2973 R2 MM18 SCRUBBER OUTLET IMPING #2	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-11	M-2974 R2 MM18 SCRUBBER OUTLET IMPING #3	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-12	M-2975 R2 MM18 SCRUBBER OUTLET IMPING #4	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-13	M-2976 R2 MM18 SCRUBBER OUTLET IMPING #5	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-14	M-2977 R2 MM18 SCRUBBER OUTLET IMPING #6	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-15	M-2978 R2 MM18 SCRUBBER OUTLET IMPING #7	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-16	M-2979 R2 MM18 SCRUBBER OUTLET IMPING #8	Air	10/15/19 00:00	10/21/19 08:45	
140-17065-17	M-2980 R3 MM18 SCRUBBER OUTLET IMPING #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-18	M-2981 R3 MM18 SCRUBBER OUTLET IMPING #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-19	M-2982 R3 MM18 SCRUBBER OUTLET IMPING #3	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-20	M-2983 R3 MM18 SCRUBBER OUTLET IMPING #4	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-21	M-2984 R3 MM18 SCRUBBER OUTLET IMPING #5	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-22	M-2985 R3 MM18 SCRUBBER OUTLET IMPING #6	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-23	M-2986 R3 MM18 SCRUBBER OUTLET IMPING #7	Air	10/16/19 00:00	10/21/19 08:45	
140-17065-24	M-2987 R3 MM18 SCRUBBER OUTLET IMPING #8	Air	10/16/19 00:00	10/21/19 08:45	

Request for Analysis/Chain-of-Custody – RFA/COC #001
Moose Creek Facility – North Pole, Alaska
Emissions Test by Modified Method 18 – Task .60

eurofins
Environment Testing
TestAmerica

Project Identification:	Emissions Test on Scrubber Outlet
Client Name:	Alaska Source Air
Client Contact:	Mr. Bill Hudson Office: (907) 562-2880
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt
Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	Hand Deliver

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Target Analytes (Target Analyte List):	Holding Time Requirements:	Preservation Requirements:
Fluoroether E-1, HFPO, Carbonyl Di-fluoride & Perfluoroacetyl fluoride (PAF)	14 Days to Analysis	Cool, 4°C
HFPO-DA & HFPO-DAF	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C
pH	Analyze as soon as reasonably possible	None
Total Fluorine	30 Days to Analysis	None

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2964 R1 MM18 Scrubber Outlet Impinger #1 #1 50ml @ start Per EPA	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2965 R1 MM18 Scrubber Outlet Impinger #2	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

140-17065 Chain of Custody

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2966 R1 MM18 Scrubber Outlet Impinger #3	1	10/14/19	MS/MSD	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2967 R1 MM18 Scrubber Outlet Impinger #4	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2968 R1 MM18 Scrubber Outlet Impinger #5	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2969 R1 MM18 Scrubber Outlet Impinger #6	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2970 R1 MM18 Scrubber Outlet Impinger #7	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2971 R1 MM18 Scrubber Outlet Impinger #8	1	10/14/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2972 R2 MM18 Scrubber Outlet Impinger #1 Sand @ start	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2973 R2 MM18 Scrubber Outlet Impinger #2	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2974 R2 MM18 Scrubber Outlet Impinger #3	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2975 R2 MM18 Scrubber Outlet Impinger #4	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2976 R2 MM18 Scrubber Outlet Impinger #5	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2977 R2 MM18 Scrubber Outlet Impinger #6	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2978 R2 MM18 Scrubber Outlet Impinger #7	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2979 R2 MM18 Scrubber Outlet Impinger #8	2	10/15/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2980 R3 MM18 Scrubber Outlet Impinger #1 50ml @ start	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2981 R3 MM18 Scrubber Outlet Impinger #2	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2982 R3 MM18 Scrubber Outlet Impinger #3	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2983 R3 MM18 Scrubber Outlet Impinger #4	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2984 R3 MM18 Scrubber Outlet Impinger #5	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2985 R3 MM18 Scrubber Outlet Impinger #6	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2986 R3 MM18 Scrubber Outlet Impinger #7	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2987 R3 MM18 Scrubber Outlet Impinger #8	3	10/16/19		250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2988 R4 MM18 Ambient Air Impinger #1	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #1 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2989 R4 MM18 Ambient Air Impinger #2	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #2 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2990 R4 MM18 Ambient Air Impinger #3	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #3 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2991 R4 MM18 Ambient Air Impinger #4	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #4 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2992 R4 MM18 Ambient Air Impinger #5	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #5 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2993 R4 MM18 Ambient Air Impinger #6	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #6 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
M-2994 R4 MM18 Ambient Air Impinger #7	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #7 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
M-2995 R4 MM18 Ambient Air Impinger #8	4	NC		250 mL HDPE Wide-Mouth Bottle	**Ambient Air Impinger Contents #8 with Methanol Rinses** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 17.4/CT 17.4°C
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 1 DRUM FEDEX # 491260162018516 PO

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19/ 11:[illegible]
Accepted By:	[signature]	AG	10/17/19 11:42
Relinquished By:	[signature]	AG	10/18/19 [illegible]
Accepted By:	[signature]	ETA KNX	10/21/19 08:45
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
17065

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : 5668 Correction factor: 0.0		✓		☑ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

H,

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1705570 PM Instructions:

Sample Receiving Associate: Date: 10-21-19

QA026R32.doc, 062719

1/30/2020

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-17066-1
Client Project/Site: MM-18 QC Samples (Task .60)

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
1/30/2020 1:54:58 PM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-17066-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-17066-1

Sample Receipt

The samples were received on October 21, 2019 at 8:45 AM. The temperature of the cooler at receipt was 17.4º C.

Receipt Exceptions

All samples were received at the laboratory outside the required temperature criteria.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

GC/MS VOA

Impinger Sample Preparation and Analysis: Impinger samples were analyzed for the volatile organic target analytes by purge and trap GCMS using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MS-0015, based on the following method:

· SW-846 8260B, “Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS)”

Each sample is prepared by adding a known amount of sample to the purge water in a purge and trap vessel and spiking with internal standards, surrogates, and matrix spike analytes (as needed). Volatile compounds are introduced into the gas chromatograph by the purge and trap method. The components are separated using the chromatograph and detected using a mass spectrometer, which provides both qualitative and quantitative information.

Impinger sample results were calculated using the following equation:

Concentration, µg/sample = (C × DF × W × Vt) / (Va)
Where:
C = On-column concentration, µg/L
DF = Dilution factor
W = Volume of water purged, L
Vt = Methanol extract final volume, µL
Va = Volume of extract analyzed, µL

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34629 recovered above the upper control limit for Bromomethane and Trichlorofluoromethane. The samples associated with this CCV were non-detects above the reporting limit for the affected analytes; therefore, the data have been reported.

Method 8260B: The laboratory control sample (LCS) for preparation batch 140-34631 and analytical batch 140-34629 recovered outside control limits for the following analytes: Bromomethane and Trichlorofluoromethane. These analytes were biased high in the LCS and were not detected above the reporting limit in the associated samples; therefore, the data have been reported.

Method 8260B: The continuing calibration verification (CCV) associated with batch 140-34666 recovered above the upper control limit for Bromomethane. The samples associated with this CCV were non-detects above the reporting limit for the affected analytes; therefore, the data have been reported.

Job ID: 140-17066-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

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

General Chemistry

Total Halogens in Air Samples: The samples were prepared for total fluorine, chlorine, bromine and/or iodine using SOP number KNOX-WC-0016 (based on ASTM Method E442 and SW-846 Method 5050). Samples derived from an air sampling train may consist of exposed filters, liquid impinger samples or liquid rinse samples from the sampling apparatus. Filters must be extracted in an appropriate solvent to provide a liquid extract for analysis. A portion of the liquid sample or extract (usually 1 mL) is oxidized by combustion in an oxygen flask at atmospheric pressure or a bomb containing oxygen under pressure. The liberated halogen compounds are absorbed primarily as halides in a sodium carbonate/sodium bicarbonate buffer solution. The combustion products are collected by repeated rinsing of the combustion apparatus, and analyzed by ion chromatography in accordance with SOP KNOX-WC-0005 (based on SW-846 Method 9056). The results are calculated using the following equation:

C = [(Ccom × Vsam× Vcom / V)/ 1 sample]

Where:
C = Concentration of analyte in the sample, ug/sample
Ccom = Concentration of analyte in the combustate, ug/mL
Vsam = Total volume of impinger sample or filter extract, mL
Vcom = Total volume of combustate, mL
V = Volume of sample combusted, mL

Anions in Impinger Solutions: Anions are is determined in accordance to SOP KNOX-WC-0005 (based on methods 300.0A and 9056). The samples were diluted a minimum of 1/20 in ion chromatography solvent buffer solution to reduce the methanol concentration before injection. Buffer concentrate was added until the pH was 10. Samples are diluted with ion chromatography eluate solution to bring the concentrations within the calibration range when necessary. Higher dilutions are applied as necessary.

An aliquot of prepared sample is introduced into the ion chromatograph. Anions are identified based on their retention times as compared to those of known standards. Quantification is accomplished by measuring the peak response and comparing it to a calibration curve generated from known standards.

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

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.4	3.48	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,1,3,3-Pentafluorobutane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,1-Trichloroethane	ND		26.4	3.80	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.8	10.4	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,1-Trifluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,2,2-Tetrachloroethane	ND		26.4	5.07	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.8	2.95	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,2-trichloro-1-fluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1,2-Trichloroethane	ND		26.4	2.74	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-Dichloro-1-fluoroethane	ND		52.8	26.4	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-dichloro-2,2-difluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-dichloro-2,2-difluoroethene	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-Dichloroethane	ND		26.4	3.17	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-Dichloroethene	ND		26.4	3.90	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-Dichloropropene	ND		26.4	2.85	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,1-Difluoroethene	ND		528	528	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2,3-Trichlorobenzene	ND		26.4	8.44	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2,3-Trichloropropane	ND		26.4	6.54	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2,4-Trichlorobenzene	ND		26.4	8.86	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2,4-Trimethylbenzene	ND		26.4	5.49	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-Dibromo-3-Chloropropane	ND		52.8	9.29	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-Dibromoethane (EDB)	ND		26.4	3.48	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-dichloro-1,1-difluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-Dichlorobenzene	ND		26.4	4.64	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-Dichloroethane	ND		26.4	4.43	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,2-Dichloropropane	ND		26.4	2.64	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,3,5-Trimethylbenzene	ND		26.4	5.49	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,3-Dichlorobenzene	ND		26.4	4.54	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,3-Dichloropropane	ND		26.4	2.95	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1,4-Dichlorobenzene	ND		26.4	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
1-Chloro-1,1-difluoroethane	ND		52.8	5.38	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2,2-Dichloropropane	ND		26.4	7.70	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-Butanone (MEK)	ND		106	16.9	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.8	7.81	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.8	5.28	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-Chlorotoluene	ND		26.4	4.96	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-Hexanone	ND		106	24.3	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
2-MTP as HFPO	ND		23.1	23.1	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
4-Chlorotoluene	ND		26.4	5.49	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
4-Isopropyltoluene	ND		26.4	7.07	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
4-Methyl-2-pentanone (MIBK)	ND		106	16.9	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Acetone	ND		106	62.3	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Benzene	ND		26.4	5.07	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Bromobenzene	ND		26.4	3.69	ug/Sample		10/23/19 10:40	10/23/19 17:57	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		26.4	5.91	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Bromodichloromethane	ND		26.4	4.54	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Bromoform	ND		26.4	8.02	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Bromomethane	ND	*	52.8	30.6	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Carbon disulfide	ND		26.4	6.54	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Carbon tetrachloride	ND		26.4	3.48	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Chlorobenzene	ND		26.4	3.80	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Chlorodibromomethane	ND		26.4	5.70	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Chloroethane	ND		52.8	11.6	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Chloroform	ND		26.4	3.06	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Chloromethane	ND		52.8	22.0	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
cis-1,2-Dichloroethene	ND		26.4	2.11	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
cis-1,3-Dichloropropene	ND		26.4	4.54	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Dibromomethane	ND		26.4	2.53	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Dichlorodifluoromethane	ND		52.8	9.29	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Ethylbenzene	ND		26.4	4.33	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.4	26.4	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Hexachlorobutadiene	ND		26.4	6.96	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.3	25.3	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Isopropylbenzene	ND		26.4	3.69	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
m,p-Xylene	ND		52.8	4.33	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Methylene Chloride	ND		26.4	16.9	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Naphthalene	ND		26.4	12.7	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
n-Butylbenzene	ND		26.4	6.75	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
n-Propylbenzene	ND		26.4	5.70	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
o-Xylene	ND		26.4	2.74	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
sec-Butylbenzene	ND		26.4	5.17	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Styrene	ND		26.4	5.70	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
tert-Butylbenzene	ND		26.4	4.64	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Tetrachloroethene	ND		26.4	3.48	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Toluene	ND		26.4	4.85	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
trans-1,2-Dichloroethene	ND		26.4	2.74	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
trans-1,3-Dichloropropene	ND		26.4	9.29	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Trichloroethene	ND		26.4	1.90	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Trichlorofluoromethane	ND	*	52.8	5.07	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Vinyl chloride	ND		52.8	12.7	ug/Sample		10/23/19 10:40	10/23/19 17:57	1
Carbonyl Difluoride	ND		77.7	77.7	ug/Sample		10/23/19 10:40	10/23/19 17:57	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*29.6*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/23/19 17:57*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 160*	*10/23/19 10:40*	*10/23/19 17:57*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*10/23/19 10:40*	*10/23/19 17:57*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:40*	*10/23/19 17:57*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:40*	*10/23/19 17:57*	*1*

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	6210	J	10600	5280	ug/Sample		10/23/19 10:40	11/14/19 23:41	1
Hydrogen Fluoride	ND		2320	1060	ug/Sample		10/23/19 10:40	11/14/19 11:25	20

Client Sample ID: O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1

Lab Sample ID: 140-17066-2

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.0	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,1,3,3-Pentafluorobutane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,1-Trichloroethane	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.1	10.3	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,1-Trifluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,2,2-Tetrachloroethane	ND		26.0	5.00	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.1	2.92	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,2-trichloro-1-fluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1,2-Trichloroethane	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-Dichloro-1-fluoroethane	ND		52.1	26.0	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-dichloro-2,2-difluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-dichloro-2,2-difluoroethene	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-Dichloroethane	ND		26.0	3.12	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-Dichloroethene	ND		26.0	3.85	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-Dichloropropene	ND		26.0	2.81	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,1-Difluoroethene	ND		521	521	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2,3-Trichlorobenzene	ND		26.0	8.33	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2,3-Trichloropropane	ND		26.0	6.46	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2,4-Trichlorobenzene	ND		26.0	8.75	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2,4-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-Dibromo-3-Chloropropane	ND		52.1	9.16	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-Dibromoethane (EDB)	ND		26.0	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-dichloro-1,1-difluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-Dichlorobenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-Dichloroethane	ND		26.0	4.37	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,2-Dichloropropane	ND		26.0	2.60	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,3,5-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,3-Dichlorobenzene	ND		26.0	4.48	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,3-Dichloropropane	ND		26.0	2.92	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1,4-Dichlorobenzene	ND		26.0	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
1-Chloro-1,1-difluoroethane	ND		52.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2,2-Dichloropropane	ND		26.0	7.60	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2-Butanone (MEK)	ND		104	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:22	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1

Lab Sample ID: 140-17066-2

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.1	7.70	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.1	5.21	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2-Chlorotoluene	ND		26.0	4.89	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2-Hexanone	ND		104	23.9	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
2-MTP as HFPO	ND		22.7	22.7	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
4-Chlorotoluene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
4-Isopropyltoluene	ND		26.0	6.98	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Acetone	ND		104	61.4	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Benzene	ND		26.0	5.00	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Bromobenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Bromochloromethane	ND		26.0	5.83	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Bromodichloromethane	ND		26.0	4.48	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Bromoform	ND		26.0	7.91	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Bromomethane	ND	*	52.1	30.2	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Carbon disulfide	ND		26.0	6.46	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Carbon tetrachloride	ND		26.0	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Chlorobenzene	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Chlorodibromomethane	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Chloroethane	ND		52.1	11.5	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Chloroform	ND		26.0	3.02	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Chloromethane	ND		52.1	21.7	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
cis-1,2-Dichloroethene	ND		26.0	2.08	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
cis-1,3-Dichloropropene	ND		26.0	4.48	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Dibromomethane	ND		26.0	2.50	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Dichlorodifluoromethane	ND		52.1	9.16	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Ethylbenzene	ND		26.0	4.27	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Hexachlorobutadiene	ND		26.0	6.87	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
HFPO dimer, methyl ester as HFPO-DA	ND		24.9	24.9	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Isopropylbenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
m,p-Xylene	ND		52.1	4.27	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Methylene Chloride	ND		26.0	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Naphthalene	ND		26.0	12.5	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
n-Butylbenzene	ND		26.0	6.66	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
n-Propylbenzene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
o-Xylene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
sec-Butylbenzene	ND		26.0	5.10	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Styrene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
tert-Butylbenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Tetrachloroethene	ND		26.0	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Toluene	ND		26.0	4.79	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
trans-1,2-Dichloroethene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
trans-1,3-Dichloropropene	ND		26.0	9.16	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Trichloroethene	ND		26.0	1.87	ug/Sample		10/23/19 10:40	10/23/19 18:22	1

Client Sample ID: O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1

Lab Sample ID: 140-17066-2

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	52.1	5.00	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Vinyl chloride	ND		52.1	12.5	ug/Sample		10/23/19 10:40	10/23/19 18:22	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/23/19 18:22	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*26.6*	*T J*	*ug/Sample*		*2.07*		*10/23/19 10:40*	*10/23/19 18:22*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*10/23/19 10:40*	*10/23/19 18:22*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:40*	*10/23/19 18:22*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:40*	*10/23/19 18:22*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/23/19 18:22*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**6360**	**J**	10400	5210	ug/Sample		10/23/19 10:40	11/15/19 00:02	1
Hydrogen Fluoride	ND		2290	1040	ug/Sample		10/23/19 10:40	11/14/19 11:45	20

Client Sample ID: O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1

Lab Sample ID: 140-17066-3

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.1	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,1,3,3-Pentafluorobutane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,1-Trichloroethane	ND		26.1	3.76	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.2	10.3	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,1-Trifluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,2,2-Tetrachloroethane	ND		26.1	5.01	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.2	2.92	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,2-trichloro-1-fluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1,2-Trichloroethane	ND		26.1	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-Dichloro-1-fluoroethane	ND		52.2	26.1	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-dichloro-2,2-difluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-dichloro-2,2-difluoroethene	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-Dichloroethane	ND		26.1	3.13	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-Dichloroethene	ND		26.1	3.86	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-Dichloropropene	ND		26.1	2.82	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,1-Difluoroethene	ND		522	522	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2,3-Trichlorobenzene	ND		26.1	8.35	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2,3-Trichloropropane	ND		26.1	6.47	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2,4-Trichlorobenzene	ND		26.1	8.77	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2,4-Trimethylbenzene	ND		26.1	5.43	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2-Dibromo-3-Chloropropane	ND		52.2	9.19	ug/Sample		10/23/19 10:40	10/23/19 18:46	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1

Lab Sample ID: 140-17066-3

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		26.1	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2-dichloro-1,1-difluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2-Dichlorobenzene	ND		26.1	4.59	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2-Dichloroethane	ND		26.1	4.38	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,2-Dichloropropane	ND		26.1	2.61	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,3,5-Trimethylbenzene	ND		26.1	5.43	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,3-Dichlorobenzene	ND		26.1	4.49	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,3-Dichloropropane	ND		26.1	2.92	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1,4-Dichlorobenzene	ND		26.1	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
1-Chloro-1,1-difluoroethane	ND		52.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2,2-Dichloropropane	ND		26.1	7.62	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-Butanone (MEK)	ND		104	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.2	7.72	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.2	5.22	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-Chlorotoluene	ND		26.1	4.91	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-Hexanone	ND		104	24.0	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
2-MTP as HFPO	ND		22.8	22.8	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
4-Chlorotoluene	ND		26.1	5.43	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
4-Isopropyltoluene	ND		26.1	6.99	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Acetone	ND		104	61.6	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Benzene	ND		26.1	5.01	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Bromobenzene	ND		26.1	3.65	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Bromochloromethane	ND		26.1	5.85	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Bromodichloromethane	ND		26.1	4.49	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Bromoform	ND		26.1	7.93	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Bromomethane	ND	*	52.2	30.3	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Carbon disulfide	ND		26.1	6.47	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Carbon tetrachloride	ND		26.1	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Chlorobenzene	ND		26.1	3.76	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Chlorodibromomethane	ND		26.1	5.64	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Chloroethane	ND		52.2	11.5	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Chloroform	ND		26.1	3.03	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Chloromethane	ND		52.2	21.7	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
cis-1,2-Dichloroethene	ND		26.1	2.09	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
cis-1,3-Dichloropropene	ND		26.1	4.49	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Dibromomethane	ND		26.1	2.51	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Dichlorodifluoromethane	ND		52.2	9.19	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Ethylbenzene	ND		26.1	4.28	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.1	26.1	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Hexachlorobutadiene	ND		26.1	6.89	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.0	25.0	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Isopropylbenzene	ND		26.1	3.65	ug/Sample		10/23/19 10:40	10/23/19 18:46	1

Client Sample ID: O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1

Lab Sample ID: 140-17066-3

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		52.2	4.28	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Methylene Chloride	ND		26.1	16.7	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Naphthalene	ND		26.1	12.5	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
n-Butylbenzene	ND		26.1	6.68	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
n-Propylbenzene	ND		26.1	5.64	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
o-Xylene	ND		26.1	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
sec-Butylbenzene	ND		26.1	5.11	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Styrene	ND		26.1	5.64	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
tert-Butylbenzene	ND		26.1	4.59	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Tetrachloroethene	ND		26.1	3.44	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Toluene	ND		26.1	4.80	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
trans-1,2-Dichloroethene	ND		26.1	2.71	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
trans-1,3-Dichloropropene	ND		26.1	9.19	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Trichloroethene	ND		26.1	1.88	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Trichlorofluoromethane	ND	*	52.2	5.01	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Vinyl chloride	ND		52.2	12.5	ug/Sample		10/23/19 10:40	10/23/19 18:46	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/23/19 18:46	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*26.4*	*T J*	*ug/Sample*		*2.06*		*10/23/19 10:40*	*10/23/19 18:46*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:40*	*10/23/19 18:46*	*1*
4-Bromofluorobenzene (Surr)	*100*		*57 - 152*	*10/23/19 10:40*	*10/23/19 18:46*	*1*
Dibromofluoromethane (Surr)	*81*		*62 - 134*	*10/23/19 10:40*	*10/23/19 18:46*	*1*
Toluene-d8 (Surr)	*106*		*71 - 139*	*10/23/19 10:40*	*10/23/19 18:46*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10400	5220	ug/Sample		10/23/19 10:40	11/15/19 00:22	1
Hydrogen Fluoride	ND		2300	1040	ug/Sample		10/23/19 10:40	11/14/19 12:06	20

Client Sample ID: O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1

Lab Sample ID: 140-17066-4

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,1,3,3-Pentafluorobutane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,1-Trichloroethane	ND		26.6	3.83	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		53.2	10.5	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,1-Trifluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,2,2-Tetrachloroethane	ND		26.6	5.11	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		53.2	2.98	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1,2-trichloro-1-fluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1

Lab Sample ID: 140-17066-4

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		26.6	2.77	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-Dichloro-1-fluoroethane	ND		53.2	26.6	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-dichloro-2,2-difluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-dichloro-2,2-difluoroethene	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-Dichloroethane	ND		26.6	3.19	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-Dichloroethene	ND		26.6	3.94	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-Dichloropropene	ND		26.6	2.87	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,1-Difluoroethene	ND		532	532	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2,2-trichloro-1,1-difluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2,3-Trichlorobenzene	ND		26.6	8.51	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2,3-Trichloropropane	ND		26.6	6.59	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2,4-Trichlorobenzene	ND		26.6	8.93	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2,4-Trimethylbenzene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-Dibromo-3-Chloropropane	ND		53.2	9.36	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-Dibromoethane (EDB)	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-dichloro-1,1-difluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-Dichlorobenzene	ND		26.6	4.68	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-Dichloroethane	ND		26.6	4.47	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,2-Dichloropropane	ND		26.6	2.66	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,3,5-Trimethylbenzene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,3-Dichlorobenzene	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,3-Dichloropropane	ND		26.6	2.98	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1,4-Dichlorobenzene	ND		26.6	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
1-Chloro-1,1-difluoroethane	ND		53.2	5.42	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2,2-Dichloropropane	ND		26.6	7.76	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-Butanone (MEK)	ND		106	17.0	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		53.2	7.87	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-Chloro-1,1,1-Trifluoroethane	ND		53.2	5.32	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-Chlorotoluene	ND		26.6	5.00	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-Hexanone	ND		106	24.5	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
2-MTP as HFPO	ND		23.2	23.2	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
4-Chlorotoluene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
4-Isopropyltoluene	ND		26.6	7.13	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
4-Methyl-2-pentanone (MIBK)	ND		106	17.0	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Acetone	ND		106	62.8	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Benzene	ND		26.6	5.11	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Bromobenzene	ND		26.6	3.72	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Bromochloromethane	ND		26.6	5.96	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Bromodichloromethane	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Bromoform	ND		26.6	8.08	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Bromomethane	ND	*	53.2	30.8	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Carbon disulfide	ND		26.6	6.59	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Carbon tetrachloride	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Chlorobenzene	ND		26.6	3.83	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Chlorodibromomethane	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 19:11	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1

Lab Sample ID: 140-17066-4

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		53.2	11.7	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Chloroform	ND		26.6	3.08	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Chloromethane	ND		53.2	22.1	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
cis-1,2-Dichloroethene	ND		26.6	2.13	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
cis-1,3-Dichloropropene	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Dibromomethane	ND		26.6	2.55	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Dichlorodifluoromethane	ND		53.2	9.36	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Ethylbenzene	ND		26.6	4.36	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.6	26.6	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Hexachlorobutadiene	ND		26.6	7.02	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.5	25.5	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Isopropylbenzene	ND		26.6	3.72	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
m,p-Xylene	ND		53.2	4.36	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Methylene Chloride	ND		26.6	17.0	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Naphthalene	ND		26.6	12.8	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
n-Butylbenzene	ND		26.6	6.81	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
n-Propylbenzene	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
o-Xylene	ND		26.6	2.77	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
sec-Butylbenzene	ND		26.6	5.21	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Styrene	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
tert-Butylbenzene	ND		26.6	4.68	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Tetrachloroethene	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Toluene	ND		26.6	4.89	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
trans-1,2-Dichloroethene	ND		26.6	2.77	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
trans-1,3-Dichloropropene	ND		26.6	9.36	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Trichloroethene	ND		26.6	1.91	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Trichlorofluoromethane	ND	*	53.2	5.11	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Vinyl chloride	ND		53.2	12.8	ug/Sample		10/23/19 10:40	10/23/19 19:11	1
Carbonyl Difluoride	ND		77.7	77.7	ug/Sample		10/23/19 10:40	10/23/19 19:11	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*28.7*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/23/19 19:11*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:40*	*10/23/19 19:11*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*10/23/19 10:40*	*10/23/19 19:11*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:40*	*10/23/19 19:11*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:40*	*10/23/19 19:11*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10600	5320	ug/Sample		10/23/19 10:40	11/15/19 00:43	1
Hydrogen Fluoride	ND		2340	1060	ug/Sample		10/23/19 10:40	11/13/19 22:45	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1

Lab Sample ID: 140-17066-5

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.8	3.54	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,1,3,3-Pentafluorobutane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,1-Trichloroethane	ND		26.8	3.86	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		53.6	10.6	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,1-Trifluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,2,2-Tetrachloroethane	ND		26.8	5.14	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		53.6	3.00	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,2-trichloro-1-fluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1,2-Trichloroethane	ND		26.8	2.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-Dichloro-1-fluoroethane	ND		53.6	26.8	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-dichloro-2,2-difluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-dichloro-2,2-difluoroethene	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-Dichloroethane	ND		26.8	3.21	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-Dichloroethene	ND		26.8	3.96	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-Dichloropropene	ND		26.8	2.89	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,1-Difluoroethene	ND		536	536	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2,2-trichloro-1,1-difluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2,3-Trichlorobenzene	ND		26.8	8.57	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2,3-Trichloropropane	ND		26.8	6.64	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2,4-Trichlorobenzene	ND		26.8	9.00	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2,4-Trimethylbenzene	ND		26.8	5.57	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-Dibromo-3-Chloropropane	ND		53.6	9.43	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-Dibromoethane (EDB)	ND		26.8	3.54	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-dichloro-1,1-difluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-Dichlorobenzene	ND		26.8	4.72	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-Dichloroethane	ND		26.8	4.50	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,2-Dichloropropane	ND		26.8	2.68	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,3,5-Trimethylbenzene	ND		26.8	5.57	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,3-Dichlorobenzene	ND		26.8	4.61	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,3-Dichloropropane	ND		26.8	3.00	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1,4-Dichlorobenzene	ND		26.8	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
1-Chloro-1,1-difluoroethane	ND		53.6	5.47	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2,2-Dichloropropane	ND		26.8	7.82	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-Butanone (MEK)	ND		107	17.1	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		53.6	7.93	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-Chloro-1,1,1-Trifluoroethane	ND		53.6	5.36	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-Chlorotoluene	ND		26.8	5.04	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-Hexanone	ND		107	24.6	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
2-MTP as HFPO	ND		23.4	23.4	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
4-Chlorotoluene	ND		26.8	5.57	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
4-Isopropyltoluene	ND		26.8	7.18	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
4-Methyl-2-pentanone (MIBK)	ND		107	17.1	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Acetone	ND		107	63.2	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Benzene	ND		26.8	5.14	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Bromobenzene	ND		26.8	3.75	ug/Sample		10/23/19 10:40	10/23/19 19:35	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1

Lab Sample ID: 140-17066-5

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		26.8	6.00	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Bromodichloromethane	ND		26.8	4.61	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Bromoform	ND		26.8	8.14	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Bromomethane	ND	*	53.6	31.1	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Carbon disulfide	ND		26.8	6.64	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Carbon tetrachloride	ND		26.8	3.54	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Chlorobenzene	ND		26.8	3.86	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Chlorodibromomethane	ND		26.8	5.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Chloroethane	ND		53.6	11.8	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Chloroform	ND		26.8	3.11	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Chloromethane	ND		53.6	22.3	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
cis-1,2-Dichloroethene	ND		26.8	2.14	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
cis-1,3-Dichloropropene	ND		26.8	4.61	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Dibromomethane	ND		26.8	2.57	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Dichlorodifluoromethane	ND		53.6	9.43	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Ethylbenzene	ND		26.8	4.39	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.8	26.8	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Hexachlorobutadiene	ND		26.8	7.07	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.7	25.7	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Isopropylbenzene	ND		26.8	3.75	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
m,p-Xylene	ND		53.6	4.39	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Methylene Chloride	ND		26.8	17.1	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Naphthalene	ND		26.8	12.9	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
n-Butylbenzene	ND		26.8	6.86	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
n-Propylbenzene	ND		26.8	5.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
o-Xylene	ND		26.8	2.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
sec-Butylbenzene	ND		26.8	5.25	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Styrene	ND		26.8	5.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
tert-Butylbenzene	ND		26.8	4.72	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Tetrachloroethene	ND		26.8	3.54	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Toluene	ND		26.8	4.93	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
trans-1,2-Dichloroethene	ND		26.8	2.79	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
trans-1,3-Dichloropropene	ND		26.8	9.43	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Trichloroethene	ND		26.8	1.93	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Trichlorofluoromethane	ND	*	53.6	5.14	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Vinyl chloride	ND		53.6	12.9	ug/Sample		10/23/19 10:40	10/23/19 19:35	1
Carbonyl Difluoride	ND		78.4	78.4	ug/Sample		10/23/19 10:40	10/23/19 19:35	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*32.5*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/23/19 19:35*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:40*	*10/23/19 19:35*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*10/23/19 10:40*	*10/23/19 19:35*	*1*
Dibromofluoromethane (Surr)	*81*		*62 - 134*	*10/23/19 10:40*	*10/23/19 19:35*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:40*	*10/23/19 19:35*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1

Lab Sample ID: 140-17066-5

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	7940	J	10700	5360	ug/Sample		10/23/19 10:40	11/15/19 01:45	1
Hydrogen Fluoride	ND		2360	1070	ug/Sample		10/23/19 10:40	11/13/19 23:05	20

Client Sample ID: O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1

Lab Sample ID: 140-17066-6

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,1,3,3-Pentafluorobutane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,1-Trichloroethane	ND		26.6	3.83	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		53.1	10.5	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,1-Trifluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,2,2-Tetrachloroethane	ND		26.6	5.10	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		53.1	2.98	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,2-trichloro-1-fluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1,2-Trichloroethane	ND		26.6	2.76	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-Dichloro-1-fluoroethane	ND		53.1	26.6	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-dichloro-2,2-difluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-dichloro-2,2-difluoroethene	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-Dichloroethane	ND		26.6	3.19	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-Dichloroethene	ND		26.6	3.93	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-Dichloropropene	ND		26.6	2.87	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,1-Difluoroethene	ND		531	531	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2,2-trichloro-1,1-difluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2,3-Trichlorobenzene	ND		26.6	8.50	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2,3-Trichloropropane	ND		26.6	6.59	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2,4-Trichlorobenzene	ND		26.6	8.93	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2,4-Trimethylbenzene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-Dibromo-3-Chloropropane	ND		53.1	9.35	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-Dibromoethane (EDB)	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-dichloro-1,1-difluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-Dichlorobenzene	ND		26.6	4.68	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-Dichloroethane	ND		26.6	4.46	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,2-Dichloropropane	ND		26.6	2.66	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,3,5-Trimethylbenzene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,3-Dichlorobenzene	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,3-Dichloropropane	ND		26.6	2.98	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1,4-Dichlorobenzene	ND		26.6	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
1-Chloro-1,1-difluoroethane	ND		53.1	5.42	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2,2-Dichloropropane	ND		26.6	7.76	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2-Butanone (MEK)	ND		106	17.0	ug/Sample		10/23/19 10:40	10/23/19 20:00	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1

Lab Sample ID: 140-17066-6

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		53.1	7.86	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2-Chloro-1,1,1-Trifluoroethane	ND		53.1	5.31	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2-Chlorotoluene	ND		26.6	4.99	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2-Hexanone	ND		106	24.4	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
2-MTP as HFPO	ND		23.2	23.2	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
4-Chlorotoluene	ND		26.6	5.53	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
4-Isopropyltoluene	ND		26.6	7.12	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
4-Methyl-2-pentanone (MIBK)	ND		106	17.0	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Acetone	ND		106	62.7	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Benzene	ND		26.6	5.10	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Bromobenzene	ND		26.6	3.72	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Bromochloromethane	ND		26.6	5.95	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Bromodichloromethane	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Bromoform	ND		26.6	8.08	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Bromomethane	ND	*	53.1	30.8	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Carbon disulfide	ND		26.6	6.59	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Carbon tetrachloride	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Chlorobenzene	ND		26.6	3.83	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Chlorodibromomethane	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Chloroethane	ND		53.1	11.7	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Chloroform	ND		26.6	3.08	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Chloromethane	ND		53.1	22.1	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
cis-1,2-Dichloroethene	ND		26.6	2.13	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
cis-1,3-Dichloropropene	ND		26.6	4.57	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Dibromomethane	ND		26.6	2.55	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Dichlorodifluoromethane	ND		53.1	9.35	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Ethylbenzene	ND		26.6	4.36	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.6	26.6	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Hexachlorobutadiene	ND		26.6	7.01	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.5	25.5	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Isopropylbenzene	ND		26.6	3.72	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
m,p-Xylene	ND		53.1	4.36	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Methylene Chloride	ND		26.6	17.0	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Naphthalene	ND		26.6	12.8	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
n-Butylbenzene	ND		26.6	6.80	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
n-Propylbenzene	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
o-Xylene	ND		26.6	2.76	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
sec-Butylbenzene	ND		26.6	5.21	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Styrene	ND		26.6	5.74	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
tert-Butylbenzene	ND		26.6	4.68	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Tetrachloroethene	ND		26.6	3.51	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Toluene	ND		26.6	4.89	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
trans-1,2-Dichloroethene	ND		26.6	2.76	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
trans-1,3-Dichloropropene	ND		26.6	9.35	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Trichloroethene	ND		26.6	1.91	ug/Sample		10/23/19 10:40	10/23/19 20:00	1

Client Sample ID: O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1

Lab Sample ID: 140-17066-6

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	53.1	5.10	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Vinyl chloride	ND		53.1	12.8	ug/Sample		10/23/19 10:40	10/23/19 20:00	1
Carbonyl Difluoride	ND		77.7	77.7	ug/Sample		10/23/19 10:40	10/23/19 20:00	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/23/19 20:00*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:40*	*10/23/19 20:00*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*10/23/19 10:40*	*10/23/19 20:00*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:40*	*10/23/19 20:00*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/23/19 20:00*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	**11500**		10600	5310	ug/Sample		10/23/19 10:40	11/15/19 02:06	1
Hydrogen Fluoride	ND		2340	1060	ug/Sample		10/23/19 10:40	11/13/19 23:26	20

Client Sample ID: O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1

Lab Sample ID: 140-17066-7

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,1,3,3-Pentafluorobutane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,1-Trichloroethane	ND		26.0	3.74	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		51.9	10.3	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,1-Trifluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,2,2-Tetrachloroethane	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		51.9	2.91	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,2-trichloro-1-fluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1,2-Trichloroethane	ND		26.0	2.70	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-Dichloro-1-fluoroethane	ND		51.9	26.0	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-dichloro-2,2-difluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-dichloro-2,2-difluoroethene	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-Dichloroethane	ND		26.0	3.12	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-Dichloroethene	ND		26.0	3.84	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-Dichloropropene	ND		26.0	2.80	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,1-Difluoroethene	ND		519	519	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2,2-trichloro-1,1-difluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2,3-Trichlorobenzene	ND		26.0	8.31	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2,3-Trichloropropane	ND		26.0	6.44	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2,4-Trichlorobenzene	ND		26.0	8.72	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2,4-Trimethylbenzene	**15.3**	**J**	26.0	5.40	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2-Dibromo-3-Chloropropane	ND		51.9	9.14	ug/Sample		10/23/19 10:40	10/24/19 15:49	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1

Lab Sample ID: 140-17066-7

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2-dichloro-1,1-difluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2-Dichlorobenzene	ND		26.0	4.57	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2-Dichloroethane	ND		26.0	4.36	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,2-Dichloropropane	ND		26.0	2.60	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,3,5-Trimethylbenzene	ND		26.0	5.40	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,3-Dichlorobenzene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,3-Dichloropropane	ND		26.0	2.91	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1,4-Dichlorobenzene	ND		26.0	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
1-Chloro-1,1-difluoroethane	ND		51.9	5.30	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2,2-Dichloropropane	ND		26.0	7.58	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-Butanone (MEK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		51.9	7.69	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-Chloro-1,1,1-Trifluoroethane	ND		51.9	5.19	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-Chlorotoluene	ND		26.0	4.88	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-Hexanone	ND		104	23.9	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
2-MTP as HFPO	ND		22.7	22.7	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
4-Chlorotoluene	ND		26.0	5.40	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
4-Isopropyltoluene	ND		26.0	6.96	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Acetone	ND		104	61.3	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Benzene	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Bromobenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Bromochloromethane	ND		26.0	5.82	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Bromodichloromethane	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Bromoform	ND		26.0	7.89	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Bromomethane	ND	*	51.9	30.1	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Carbon disulfide	ND		26.0	6.44	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Carbon tetrachloride	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Chlorobenzene	ND		26.0	3.74	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Chlorodibromomethane	ND		26.0	5.61	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Chloroethane	ND		51.9	11.4	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Chloroform	ND		26.0	3.01	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Chloromethane	ND		51.9	21.6	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
cis-1,2-Dichloroethene	ND		26.0	2.08	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
cis-1,3-Dichloropropene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Dibromomethane	ND		26.0	2.49	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Dichlorodifluoromethane	ND		51.9	9.14	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Ethylbenzene	ND		26.0	4.26	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Hexachlorobutadiene	ND		26.0	6.85	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
HFPO dimer, methyl ester as HFPO-DA	ND		24.9	24.9	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Isopropylbenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 15:49	1

Client Sample ID: O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1

Lab Sample ID: 140-17066-7

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		51.9	4.26	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Methylene Chloride	ND		26.0	16.6	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Naphthalene	ND		26.0	12.5	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
n-Butylbenzene	ND		26.0	6.65	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
n-Propylbenzene	ND		26.0	5.61	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
o-Xylene	ND		26.0	2.70	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
sec-Butylbenzene	ND		26.0	5.09	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Styrene	ND		26.0	5.61	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
tert-Butylbenzene	ND		26.0	4.57	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Tetrachloroethene	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Toluene	ND		26.0	4.78	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
trans-1,2-Dichloroethene	ND		26.0	2.70	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
trans-1,3-Dichloropropene	ND		26.0	9.14	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Trichloroethene	ND		26.0	1.87	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Trichlorofluoromethane	ND	*	51.9	4.99	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Vinyl chloride	ND		51.9	12.5	ug/Sample		10/23/19 10:40	10/24/19 15:49	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/24/19 15:49	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*26.5*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/24/19 15:49*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:40*	*10/24/19 15:49*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:40*	*10/24/19 15:49*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/24/19 15:49*	*1*
Toluene-d8 (Surr)	*101*		*71 - 139*	*10/23/19 10:40*	*10/24/19 15:49*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10400	5190	ug/Sample		10/23/19 10:40	11/15/19 02:26	1
Hydrogen Fluoride	ND		2280	1040	ug/Sample		10/23/19 10:40	11/13/19 23:47	20

Client Sample ID: O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1

Lab Sample ID: 140-17066-8

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.2	3.46	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,1,3,3-Pentafluorobutane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,1-Trichloroethane	ND		26.2	3.77	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.4	10.4	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,1-Trifluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,2,2-Tetrachloroethane	ND		26.2	5.03	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.4	2.94	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1,2-trichloro-1-fluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1

Lab Sample ID: 140-17066-8

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		26.2	2.73	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-Dichloro-1-fluoroethane	ND		52.4	26.2	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-dichloro-2,2-difluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-dichloro-2,2-difluoroethene	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-Dichloroethane	ND		26.2	3.15	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-Dichloroethene	ND		26.2	3.88	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-Dichloropropene	ND		26.2	2.83	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,1-Difluoroethene	ND		524	524	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2,3-Trichlorobenzene	ND		26.2	8.39	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2,3-Trichloropropane	ND		26.2	6.50	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2,4-Trichlorobenzene	ND		26.2	8.81	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2,4-Trimethylbenzene	ND		26.2	5.45	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-Dibromo-3-Chloropropane	ND		52.4	9.23	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-Dibromoethane (EDB)	ND		26.2	3.46	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-dichloro-1,1-difluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-Dichlorobenzene	ND		26.2	4.61	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-Dichloroethane	ND		26.2	4.40	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,2-Dichloropropane	ND		26.2	2.62	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,3,5-Trimethylbenzene	ND		26.2	5.45	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,3-Dichlorobenzene	ND		26.2	4.51	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,3-Dichloropropane	ND		26.2	2.94	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1,4-Dichlorobenzene	ND		26.2	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
1-Chloro-1,1-difluoroethane	ND		52.4	5.35	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2,2-Dichloropropane	ND		26.2	7.65	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-Butanone (MEK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.4	7.76	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.4	5.24	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-Chlorotoluene	ND		26.2	4.93	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-Hexanone	ND		105	24.1	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
2-MTP as HFPO	ND		22.9	22.9	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
4-Chlorotoluene	ND		26.2	5.45	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
4-Isopropyltoluene	ND		26.2	7.03	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
4-Methyl-2-pentanone (MIBK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Acetone	ND		105	61.9	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Benzene	ND		26.2	5.03	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Bromobenzene	ND		26.2	3.67	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Bromochloromethane	ND		26.2	5.87	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Bromodichloromethane	ND		26.2	4.51	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Bromoform	ND		26.2	7.97	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Bromomethane	ND	*	52.4	30.4	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Carbon disulfide	ND		26.2	6.50	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Carbon tetrachloride	ND		26.2	3.46	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Chlorobenzene	ND		26.2	3.77	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Chlorodibromomethane	ND		26.2	5.66	ug/Sample		10/23/19 10:40	10/24/19 16:14	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1

Lab Sample ID: 140-17066-8

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		52.4	11.5	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Chloroform	ND		26.2	3.04	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Chloromethane	ND		52.4	21.8	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
cis-1,2-Dichloroethene	ND		26.2	2.10	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
cis-1,3-Dichloropropene	ND		26.2	4.51	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Dibromomethane	ND		26.2	2.52	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Dichlorodifluoromethane	ND		52.4	9.23	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Ethylbenzene	ND		26.2	4.30	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.2	26.2	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Hexachlorobutadiene	ND		26.2	6.92	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.1	25.1	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Isopropylbenzene	ND		26.2	3.67	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
m,p-Xylene	ND		52.4	4.30	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Methylene Chloride	ND		26.2	16.8	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Naphthalene	ND		26.2	12.6	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
n-Butylbenzene	ND		26.2	6.71	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
n-Propylbenzene	ND		26.2	5.66	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
o-Xylene	ND		26.2	2.73	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
sec-Butylbenzene	ND		26.2	5.14	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Styrene	ND		26.2	5.66	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
tert-Butylbenzene	ND		26.2	4.61	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Tetrachloroethene	ND		26.2	3.46	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Toluene	ND		26.2	4.82	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
trans-1,2-Dichloroethene	ND		26.2	2.73	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
trans-1,3-Dichloropropene	ND		26.2	9.23	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Trichloroethene	ND		26.2	1.89	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Trichlorofluoromethane	ND	*	52.4	5.03	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Vinyl chloride	ND		52.4	12.6	ug/Sample		10/23/19 10:40	10/24/19 16:14	1
Carbonyl Difluoride	ND		76.9	76.9	ug/Sample		10/23/19 10:40	10/24/19 16:14	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/24/19 16:14*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:40*	*10/24/19 16:14*	*1*
4-Bromofluorobenzene (Surr)	*92*		*57 - 152*	*10/23/19 10:40*	*10/24/19 16:14*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/24/19 16:14*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 16:14*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10500	5240	ug/Sample		10/23/19 10:40	11/15/19 02:47	1
Hydrogen Fluoride	ND		2310	1050	ug/Sample		10/23/19 10:40	11/14/19 00:53	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2

Lab Sample ID: 140-17066-9

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		27.2	3.58	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,1,3,3-Pentafluorobutane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,1-Trichloroethane	ND		27.2	3.91	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		54.3	10.8	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,2,2-Tetrachloroethane	ND		27.2	5.21	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		54.3	3.04	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,2-trichloro-1-fluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1,2-Trichloroethane	ND		27.2	2.82	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-Dichloro-1-fluoroethane	ND		54.3	27.2	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-dichloro-2,2-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-dichloro-2,2-difluoroethene	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-Dichloroethane	ND		27.2	3.26	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-Dichloroethene	ND		27.2	4.02	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-Dichloropropene	ND		27.2	2.93	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,1-Difluoroethene	ND		543	543	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2,2-trichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2,3-Trichlorobenzene	ND		27.2	8.69	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2,3-Trichloropropane	ND		27.2	6.73	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2,4-Trichlorobenzene	ND		27.2	9.12	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2,4-Trimethylbenzene	ND		27.2	5.65	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-Dibromo-3-Chloropropane	ND		54.3	9.56	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-Dibromoethane (EDB)	ND		27.2	3.58	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-dichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-Dichlorobenzene	ND		27.2	4.78	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-Dichloroethane	ND		27.2	4.56	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,2-Dichloropropane	ND		27.2	2.72	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,3,5-Trimethylbenzene	ND		27.2	5.65	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,3-Dichlorobenzene	ND		27.2	4.67	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,3-Dichloropropane	ND		27.2	3.04	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1,4-Dichlorobenzene	ND		27.2	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
1-Chloro-1,1-difluoroethane	ND		54.3	5.54	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2,2-Dichloropropane	ND		27.2	7.93	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-Butanone (MEK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		54.3	8.04	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-Chloro-1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-Chlorotoluene	ND		27.2	5.10	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-Hexanone	ND		109	25.0	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
2-MTP as HFPO	ND		23.8	23.8	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
4-Chlorotoluene	ND		27.2	5.65	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
4-Isopropyltoluene	ND		27.2	7.28	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
4-Methyl-2-pentanone (MIBK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Acetone	ND		109	64.1	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Benzene	ND		27.2	5.21	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Bromobenzene	ND		27.2	3.80	ug/Sample		10/23/19 10:40	10/24/19 16:38	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2

Lab Sample ID: 140-17066-9

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		27.2	6.08	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Bromodichloromethane	ND		27.2	4.67	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Bromoform	ND		27.2	8.25	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Bromomethane	ND	*	54.3	31.5	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Carbon disulfide	ND		27.2	6.73	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Carbon tetrachloride	ND		27.2	3.58	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Chlorobenzene	ND		27.2	3.91	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Chlorodibromomethane	ND		27.2	5.86	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Chloroethane	ND		54.3	11.9	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Chloroform	ND		27.2	3.15	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Chloromethane	ND		54.3	22.6	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
cis-1,2-Dichloroethene	ND		27.2	2.17	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
cis-1,3-Dichloropropene	ND		27.2	4.67	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Dibromomethane	ND		27.2	2.61	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Dichlorodifluoromethane	ND		54.3	9.56	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Ethylbenzene	ND		27.2	4.45	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		27.2	27.2	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Hexachlorobutadiene	ND		27.2	7.17	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
HFPO dimer, methyl ester as HFPO-DA	ND		26.1	26.1	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Isopropylbenzene	ND		27.2	3.80	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
m,p-Xylene	ND		54.3	4.45	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Methylene Chloride	ND		27.2	17.4	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Naphthalene	ND		27.2	13.0	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
n-Butylbenzene	ND		27.2	6.95	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
n-Propylbenzene	ND		27.2	5.86	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
o-Xylene	ND		27.2	2.82	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
sec-Butylbenzene	ND		27.2	5.32	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Styrene	ND		27.2	5.86	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
tert-Butylbenzene	ND		27.2	4.78	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Tetrachloroethene	ND		27.2	3.58	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Toluene	ND		27.2	5.00	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
trans-1,2-Dichloroethene	ND		27.2	2.82	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
trans-1,3-Dichloropropene	ND		27.2	9.56	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Trichloroethene	ND		27.2	1.95	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Trichlorofluoromethane	ND	*	54.3	5.21	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Vinyl chloride	ND		54.3	13.0	ug/Sample		10/23/19 10:40	10/24/19 16:38	1
Carbonyl Difluoride	ND		79.9	79.9	ug/Sample		10/23/19 10:40	10/24/19 16:38	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*29.8*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/24/19 16:38*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:40*	*10/24/19 16:38*	*1*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*	*10/23/19 10:40*	*10/24/19 16:38*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/24/19 16:38*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 16:38*	*1*

Client Sample ID: O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2

Lab Sample ID: 140-17066-9

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10900	5430	ug/Sample		10/23/19 10:40	11/15/19 03:10	1
Hydrogen Fluoride	ND		2390	1090	ug/Sample		10/23/19 10:40	11/14/19 01:14	20

Client Sample ID: O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2

Lab Sample ID: 140-17066-10

Date Collected: 10/16/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,1,3,3-Pentafluorobutane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,1-Trichloroethane	ND		26.3	3.78	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.6	10.4	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,1-Trifluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,2,2-Tetrachloroethane	ND		26.3	5.04	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.6	2.94	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,2-trichloro-1-fluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1,2-Trichloroethane	ND		26.3	2.73	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-Dichloro-1-fluoroethane	ND		52.6	26.3	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-dichloro-2,2-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-dichloro-2,2-difluoroethene	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-Dichloroethane	ND		26.3	3.15	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-Dichloroethene	ND		26.3	3.89	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-Dichloropropene	ND		26.3	2.84	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,1-Difluoroethene	ND		526	526	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2,3-Trichlorobenzene	ND		26.3	8.41	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2,3-Trichloropropane	ND		26.3	6.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2,4-Trichlorobenzene	ND		26.3	8.83	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2,4-Trimethylbenzene	ND		26.3	5.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-Dibromo-3-Chloropropane	ND		52.6	9.25	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-Dibromoethane (EDB)	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-dichloro-1,1-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-Dichlorobenzene	ND		26.3	4.62	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-Dichloroethane	ND		26.3	4.41	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,2-Dichloropropane	ND		26.3	2.63	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,3,5-Trimethylbenzene	ND		26.3	5.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,3-Dichlorobenzene	ND		26.3	4.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,3-Dichloropropane	ND		26.3	2.94	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1,4-Dichlorobenzene	ND		26.3	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
1-Chloro-1,1-difluoroethane	ND		52.6	5.36	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2,2-Dichloropropane	ND		26.3	7.67	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2-Butanone (MEK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 17:03	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2

Lab Sample ID: 140-17066-10

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.6	7.78	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2-Chlorotoluene	ND		26.3	4.94	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2-Hexanone	ND		105	24.2	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
2-MTP as HFPO	ND		23.0	23.0	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
4-Chlorotoluene	ND		26.3	5.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
4-Isopropyltoluene	ND		26.3	7.04	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
4-Methyl-2-pentanone (MIBK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Acetone	ND		105	62.0	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Benzene	ND		26.3	5.04	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Bromobenzene	ND		26.3	3.68	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Bromochloromethane	ND		26.3	5.89	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Bromodichloromethane	ND		26.3	4.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Bromoform	ND		26.3	7.99	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Bromomethane	ND	*	52.6	30.5	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Carbon disulfide	ND		26.3	6.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Carbon tetrachloride	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Chlorobenzene	ND		26.3	3.78	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Chlorodibromomethane	ND		26.3	5.68	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Chloroethane	ND		52.6	11.6	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Chloroform	ND		26.3	3.05	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Chloromethane	ND		52.6	21.9	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
cis-1,2-Dichloroethene	ND		26.3	2.10	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
cis-1,3-Dichloropropene	ND		26.3	4.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Dibromomethane	ND		26.3	2.52	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Dichlorodifluoromethane	ND		52.6	9.25	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Ethylbenzene	ND		26.3	4.31	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.3	26.3	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Hexachlorobutadiene	ND		26.3	6.94	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.2	25.2	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Isopropylbenzene	ND		26.3	3.68	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
m,p-Xylene	ND		52.6	4.31	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Methylene Chloride	ND		26.3	16.8	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Naphthalene	ND		26.3	12.6	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
n-Butylbenzene	ND		26.3	6.73	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
n-Propylbenzene	ND		26.3	5.68	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
o-Xylene	ND		26.3	2.73	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
sec-Butylbenzene	ND		26.3	5.15	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Styrene	ND		26.3	5.68	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
tert-Butylbenzene	ND		26.3	4.62	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Tetrachloroethene	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Toluene	ND		26.3	4.83	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
trans-1,2-Dichloroethene	ND		26.3	2.73	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
trans-1,3-Dichloropropene	ND		26.3	9.25	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Trichloroethene	ND		26.3	1.89	ug/Sample		10/23/19 10:40	10/24/19 17:03	1

Client Sample ID: O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2

Lab Sample ID: 140-17066-10

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND	*	52.6	5.04	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Vinyl chloride	ND		52.6	12.6	ug/Sample		10/23/19 10:40	10/24/19 17:03	1
Carbonyl Difluoride	ND		76.9	76.9	ug/Sample		10/23/19 10:40	10/24/19 17:03	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/24/19 17:03*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:40*	*10/24/19 17:03*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:40*	*10/24/19 17:03*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/24/19 17:03*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 17:03*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10500	5260	ug/Sample		10/23/19 10:40	11/15/19 03:33	1
Hydrogen Fluoride	ND		2310	1050	ug/Sample		10/23/19 10:40	11/14/19 01:34	20

Client Sample ID: O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2

Lab Sample ID: 140-17066-11

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,1,3,3-Pentafluorobutane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,1-Trichloroethane	ND		27.1	3.91	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		54.3	10.7	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,2,2-Tetrachloroethane	ND		27.1	5.21	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		54.3	3.04	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,2-trichloro-1-fluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1,2-Trichloroethane	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-Dichloro-1-fluoroethane	ND		54.3	27.1	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-dichloro-2,2-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-dichloro-2,2-difluoroethene	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-Dichloroethane	ND		27.1	3.26	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-Dichloroethene	ND		27.1	4.02	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-Dichloropropene	ND		27.1	2.93	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,1-Difluoroethene	ND		543	543	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2,2-trichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2,3-Trichlorobenzene	ND		27.1	8.68	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2,3-Trichloropropane	ND		27.1	6.73	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2,4-Trichlorobenzene	ND		27.1	9.12	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2,4-Trimethylbenzene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2-Dibromo-3-Chloropropane	ND		54.3	9.55	ug/Sample		10/23/19 10:40	10/24/19 17:27	1

Client Sample ID: O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2

Lab Sample ID: 140-17066-11

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2-dichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2-Dichlorobenzene	ND		27.1	4.78	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2-Dichloroethane	ND		27.1	4.56	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,2-Dichloropropane	ND		27.1	2.71	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,3,5-Trimethylbenzene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,3-Dichlorobenzene	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,3-Dichloropropane	ND		27.1	3.04	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1,4-Dichlorobenzene	ND		27.1	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
1-Chloro-1,1-difluoroethane	ND		54.3	5.54	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2,2-Dichloropropane	ND		27.1	7.92	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-Butanone (MEK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		54.3	8.03	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-Chloro-1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-Chlorotoluene	ND		27.1	5.10	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-Hexanone	ND		109	25.0	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
2-MTP as HFPO	ND		23.7	23.7	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
4-Chlorotoluene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
4-Isopropyltoluene	ND		27.1	7.27	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
4-Methyl-2-pentanone (MIBK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Acetone	ND		109	64.0	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Benzene	ND		27.1	5.21	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Bromobenzene	ND		27.1	3.80	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Bromochloromethane	ND		27.1	6.08	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Bromodichloromethane	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Bromoform	ND		27.1	8.25	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Bromomethane	ND	*	54.3	31.5	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Carbon disulfide	ND		27.1	6.73	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Carbon tetrachloride	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Chlorobenzene	ND		27.1	3.91	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Chlorodibromomethane	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Chloroethane	ND		54.3	11.9	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Chloroform	ND		27.1	3.15	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Chloromethane	ND		54.3	22.6	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
cis-1,2-Dichloroethene	ND		27.1	2.17	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
cis-1,3-Dichloropropene	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Dibromomethane	ND		27.1	2.61	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Dichlorodifluoromethane	ND		54.3	9.55	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Ethylbenzene	ND		27.1	4.45	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		27.1	27.1	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Hexachlorobutadiene	ND		27.1	7.16	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
HFPO dimer, methyl ester as HFPO-DA	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Isopropylbenzene	ND		27.1	3.80	ug/Sample		10/23/19 10:40	10/24/19 17:27	1

Client Sample ID: O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2

Lab Sample ID: 140-17066-11

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	ND		54.3	4.45	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Methylene Chloride	ND		27.1	17.4	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Naphthalene	ND		27.1	13.0	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
n-Butylbenzene	ND		27.1	6.95	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
n-Propylbenzene	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
o-Xylene	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
sec-Butylbenzene	ND		27.1	5.32	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Styrene	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
tert-Butylbenzene	ND		27.1	4.78	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Tetrachloroethene	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Toluene	ND		27.1	4.99	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
trans-1,2-Dichloroethene	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
trans-1,3-Dichloropropene	ND		27.1	9.55	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Trichloroethene	ND		27.1	1.95	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Trichlorofluoromethane	ND	*	54.3	5.21	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Vinyl chloride	ND		54.3	13.0	ug/Sample		10/23/19 10:40	10/24/19 17:27	1
Carbonyl Difluoride	ND		79.9	79.9	ug/Sample		10/23/19 10:40	10/24/19 17:27	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/24/19 17:27*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:40*	*10/24/19 17:27*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:40*	*10/24/19 17:27*	*1*
Dibromofluoromethane (Surr)	*86*		*62 - 134*	*10/23/19 10:40*	*10/24/19 17:27*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 17:27*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10900	5430	ug/Sample		10/23/19 10:40	11/15/19 03:53	1
Hydrogen Fluoride	ND		2390	1090	ug/Sample		10/23/19 10:40	11/14/19 01:55	20

Client Sample ID: O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2

Lab Sample ID: 140-17066-12

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,1,3,3-Pentafluorobutane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,1-Trichloroethane	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.0	10.3	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,1-Trifluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,2,2-Tetrachloroethane	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.0	2.91	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1,2-trichloro-1-fluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2

Lab Sample ID: 140-17066-12

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2-Trichloroethane	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-Dichloro-1-fluoroethane	ND		52.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-dichloro-2,2-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-dichloro-2,2-difluoroethene	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-Dichloroethane	ND		26.0	3.12	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-Dichloroethene	ND		26.0	3.85	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-Dichloropropene	ND		26.0	2.81	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,1-Difluoroethene	ND		520	520	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2,3-Trichlorobenzene	ND		26.0	8.32	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2,3-Trichloropropane	ND		26.0	6.45	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2,4-Trichlorobenzene	ND		26.0	8.74	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2,4-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-Dibromo-3-Chloropropane	ND		52.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-Dibromoethane (EDB)	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-dichloro-1,1-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-Dichlorobenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-Dichloroethane	ND		26.0	4.37	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,2-Dichloropropane	ND		26.0	2.60	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,3,5-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,3-Dichlorobenzene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,3-Dichloropropane	ND		26.0	2.91	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1,4-Dichlorobenzene	ND		26.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
1-Chloro-1,1-difluoroethane	ND		52.0	5.31	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2,2-Dichloropropane	ND		26.0	7.60	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-Butanone (MEK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.0	7.70	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-Chlorotoluene	ND		26.0	4.89	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-Hexanone	ND		104	23.9	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
2-MTP as HFPO	ND		22.7	22.7	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
4-Chlorotoluene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
4-Isopropyltoluene	ND		26.0	6.97	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Acetone	ND		104	61.4	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Benzene	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Bromobenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Bromochloromethane	ND		26.0	5.83	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Bromodichloromethane	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Bromoform	ND		26.0	7.91	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Bromomethane	ND	*	52.0	30.2	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Carbon disulfide	ND		26.0	6.45	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Carbon tetrachloride	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Chlorobenzene	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Chlorodibromomethane	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 17:52	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2

Lab Sample ID: 140-17066-12

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	ND		52.0	11.4	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Chloroform	ND		26.0	3.02	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Chloromethane	ND		52.0	21.6	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
cis-1,2-Dichloroethene	ND		26.0	2.08	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
cis-1,3-Dichloropropene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Dibromomethane	ND		26.0	2.50	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Dichlorodifluoromethane	ND		52.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Ethylbenzene	ND		26.0	4.27	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Hexachlorobutadiene	ND		26.0	6.87	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
HFPO dimer, methyl ester as HFPO-DA	ND		24.9	24.9	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Isopropylbenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
m,p-Xylene	ND		52.0	4.27	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Methylene Chloride	ND		26.0	16.6	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Naphthalene	ND		26.0	12.5	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
n-Butylbenzene	ND		26.0	6.66	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
n-Propylbenzene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
o-Xylene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
sec-Butylbenzene	ND		26.0	5.10	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Styrene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
tert-Butylbenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Tetrachloroethene	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Toluene	ND		26.0	4.79	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
trans-1,2-Dichloroethene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
trans-1,3-Dichloropropene	ND		26.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Trichloroethene	ND		26.0	1.87	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Trichlorofluoromethane	ND	*	52.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Vinyl chloride	ND		52.0	12.5	ug/Sample		10/23/19 10:40	10/24/19 17:52	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/24/19 17:52	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Unknown	*27.3*	*T J*	*ug/Sample*		*2.08*		*10/23/19 10:40*	*10/24/19 17:52*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:40*	*10/24/19 17:52*	*1*
4-Bromofluorobenzene (Surr)	*93*		*57 - 152*	*10/23/19 10:40*	*10/24/19 17:52*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/24/19 17:52*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 17:52*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10400	5200	ug/Sample		10/23/19 10:40	11/15/19 04:14	1
Hydrogen Fluoride	ND		2290	1040	ug/Sample		10/23/19 10:40	11/14/19 02:16	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2

Lab Sample ID: 140-17066-13

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,1,3,3-Pentafluorobutane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,1-Trichloroethane	ND		27.1	3.91	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		54.3	10.7	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,2,2-Tetrachloroethane	ND		27.1	5.21	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		54.3	3.04	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,2-trichloro-1-fluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1,2-Trichloroethane	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-Dichloro-1-fluoroethane	ND		54.3	27.1	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-dichloro-2,2-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-dichloro-2,2-difluoroethene	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-Dichloroethane	ND		27.1	3.26	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-Dichloroethene	ND		27.1	4.02	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-Dichloropropene	ND		27.1	2.93	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,1-Difluoroethene	ND		543	543	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2,2-trichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2,3-Trichlorobenzene	ND		27.1	8.68	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2,3-Trichloropropane	ND		27.1	6.73	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2,4-Trichlorobenzene	ND		27.1	9.12	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2,4-Trimethylbenzene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-Dibromo-3-Chloropropane	ND		54.3	9.55	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-Dibromoethane (EDB)	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-dichloro-1,1-difluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-Dichlorobenzene	ND		27.1	4.77	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-Dichloroethane	ND		27.1	4.56	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,2-Dichloropropane	ND		27.1	2.71	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,3,5-Trimethylbenzene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,3-Dichlorobenzene	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,3-Dichloropropane	ND		27.1	3.04	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1,4-Dichlorobenzene	ND		27.1	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
1-Chloro-1,1-difluoroethane	ND		54.3	5.53	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2,2-Dichloropropane	ND		27.1	7.92	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-Butanone (MEK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		54.3	8.03	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-Chloro-1,1,1-Trifluoroethane	ND		54.3	5.43	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-Chlorotoluene	ND		27.1	5.10	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-Hexanone	ND		109	25.0	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
2-MTP as HFPO	ND		23.7	23.7	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
4-Chlorotoluene	ND		27.1	5.64	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
4-Isopropyltoluene	ND		27.1	7.27	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
4-Methyl-2-pentanone (MIBK)	ND		109	17.4	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Acetone	ND		109	64.0	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Benzene	ND		27.1	5.21	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Bromobenzene	ND		27.1	3.80	ug/Sample		10/23/19 10:40	10/24/19 18:20	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2

Lab Sample ID: 140-17066-13

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromochloromethane	ND		27.1	6.08	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Bromodichloromethane	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Bromoform	ND		27.1	8.25	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Bromomethane	ND	*	54.3	31.5	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Carbon disulfide	ND		27.1	6.73	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Carbon tetrachloride	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Chlorobenzene	ND		27.1	3.91	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Chlorodibromomethane	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Chloroethane	ND		54.3	11.9	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Chloroform	ND		27.1	3.15	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Chloromethane	ND		54.3	22.6	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
cis-1,2-Dichloroethene	ND		27.1	2.17	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
cis-1,3-Dichloropropene	ND		27.1	4.67	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Dibromomethane	ND		27.1	2.60	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Dichlorodifluoromethane	ND		54.3	9.55	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Ethylbenzene	ND		27.1	4.45	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		27.1	27.1	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Hexachlorobutadiene	ND		27.1	7.16	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
HFPO dimer, methyl ester as HFPO-DA	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Isopropylbenzene	ND		27.1	3.80	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
m,p-Xylene	ND		54.3	4.45	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Methylene Chloride	ND		27.1	17.4	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Naphthalene	ND		27.1	13.0	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
n-Butylbenzene	ND		27.1	6.95	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
n-Propylbenzene	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
o-Xylene	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
sec-Butylbenzene	ND		27.1	5.32	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Styrene	ND		27.1	5.86	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
tert-Butylbenzene	ND		27.1	4.77	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Tetrachloroethene	ND		27.1	3.58	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Toluene	ND		27.1	4.99	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
trans-1,2-Dichloroethene	ND		27.1	2.82	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
trans-1,3-Dichloropropene	ND		27.1	9.55	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Trichloroethene	ND		27.1	1.95	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Trichlorofluoromethane	ND	*	54.3	5.21	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Vinyl chloride	ND		54.3	13.0	ug/Sample		10/23/19 10:40	10/24/19 18:20	1
Carbonyl Difluoride	ND		79.9	79.9	ug/Sample		10/23/19 10:40	10/24/19 18:20	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Bis(.beta.-chloroethyl) sulfoxide	*27.2*	*T J N*	*ug/Sample*		*2.08*	*5819-08-9*	*10/23/19 10:40*	*10/24/19 18:20*	*1*
Cyclohexane	*28.9*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/24/19 18:20*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*70 - 160*	*10/23/19 10:40*	*10/24/19 18:20*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:40*	*10/24/19 18:20*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:40*	*10/24/19 18:20*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2

Lab Sample ID: 140-17066-13

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	103		71 - 139	10/23/19 10:40	10/24/19 18:20	1

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10900	5430	ug/Sample		10/23/19 10:40	11/15/19 04:35	1
Hydrogen Fluoride	ND		2390	1090	ug/Sample		10/23/19 10:40	11/14/19 02:36	20

Client Sample ID: O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2

Lab Sample ID: 140-17066-14

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		25.9	3.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,1,3,3-Pentafluorobutane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,1-Trichloroethane	ND		25.9	3.73	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		51.8	10.3	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,1-Trifluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,2,2-Tetrachloroethane	ND		25.9	4.97	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		51.8	2.90	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,2-trichloro-1-fluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1,2-Trichloroethane	ND		25.9	2.69	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-Dichloro-1-fluoroethane	ND		51.8	25.9	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-dichloro-2,2-difluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-dichloro-2,2-difluoroethene	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-Dichloroethane	ND		25.9	3.11	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-Dichloroethene	ND		25.9	3.83	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-Dichloropropene	ND		25.9	2.80	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,1-Difluoroethene	ND		518	518	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2,2-trichloro-1,1-difluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2,3-Trichlorobenzene	ND		25.9	8.29	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2,3-Trichloropropane	ND		25.9	6.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2,4-Trichlorobenzene	ND		25.9	8.70	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2,4-Trimethylbenzene	ND		25.9	5.39	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-Dibromo-3-Chloropropane	ND		51.8	9.12	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-Dibromoethane (EDB)	ND		25.9	3.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-dichloro-1,1-difluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-Dichlorobenzene	ND		25.9	4.56	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-Dichloroethane	ND		25.9	4.35	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,2-Dichloropropane	ND		25.9	2.59	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,3,5-Trimethylbenzene	ND		25.9	5.39	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,3-Dichlorobenzene	ND		25.9	4.45	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,3-Dichloropropane	ND		25.9	2.90	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1,4-Dichlorobenzene	ND		25.9	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
1-Chloro-1,1-difluoroethane	ND		51.8	5.28	ug/Sample		10/23/19 10:40	10/24/19 18:45	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2

Lab Sample ID: 140-17066-14

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2,2-Dichloropropane	ND		25.9	7.56	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-Butanone (MEK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		51.8	7.67	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-Chloro-1,1,1-Trifluoroethane	ND		51.8	5.18	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-Chlorotoluene	ND		25.9	4.87	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-Hexanone	ND		104	23.8	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
2-MTP as HFPO	ND		22.6	22.6	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
4-Chlorotoluene	ND		25.9	5.39	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
4-Isopropyltoluene	ND		25.9	6.94	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Acetone	ND		104	61.1	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Benzene	ND		25.9	4.97	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Bromobenzene	ND		25.9	3.63	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Bromochloromethane	ND		25.9	5.80	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Bromodichloromethane	ND		25.9	4.45	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Bromoform	ND		25.9	7.87	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Bromomethane	ND	*	51.8	30.0	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Carbon disulfide	ND		25.9	6.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Carbon tetrachloride	ND		25.9	3.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Chlorobenzene	ND		25.9	3.73	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Chlorodibromomethane	ND		25.9	5.59	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Chloroethane	ND		51.8	11.4	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Chloroform	ND		25.9	3.00	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Chloromethane	ND		51.8	21.5	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
cis-1,2-Dichloroethene	ND		25.9	2.07	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
cis-1,3-Dichloropropene	ND		25.9	4.45	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Dibromomethane	ND		25.9	2.49	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Dichlorodifluoromethane	ND		51.8	9.12	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Ethylbenzene	ND		25.9	4.25	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		25.9	25.9	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Hexachlorobutadiene	ND		25.9	6.84	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
HFPO dimer, methyl ester as HFPO-DA	ND		24.8	24.8	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Isopropylbenzene	ND		25.9	3.63	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
m,p-Xylene	ND		51.8	4.25	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Methylene Chloride	ND		25.9	16.6	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Naphthalene	ND		25.9	12.4	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
n-Butylbenzene	ND		25.9	6.63	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
n-Propylbenzene	ND		25.9	5.59	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
o-Xylene	ND		25.9	2.69	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
sec-Butylbenzene	ND		25.9	5.08	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Styrene	ND		25.9	5.59	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
tert-Butylbenzene	ND		25.9	4.56	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Tetrachloroethene	ND		25.9	3.42	ug/Sample		10/23/19 10:40	10/24/19 18:45	1

Client Sample ID: O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2

Lab Sample ID: 140-17066-14

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		25.9	4.77	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
trans-1,2-Dichloroethene	ND		25.9	2.69	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
trans-1,3-Dichloropropene	ND		25.9	9.12	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Trichloroethene	ND		25.9	1.86	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Trichlorofluoromethane	ND	*	51.8	4.97	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Vinyl chloride	ND		51.8	12.4	ug/Sample		10/23/19 10:40	10/24/19 18:45	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/24/19 18:45	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Cyclohexane	*32.0*	*T J N*	*ug/Sample*		*4.52*	*110-82-7*	*10/23/19 10:40*	*10/24/19 18:45*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*70 - 160*	*10/23/19 10:40*	*10/24/19 18:45*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:40*	*10/24/19 18:45*	*1*
Dibromofluoromethane (Surr)	*83*		*62 - 134*	*10/23/19 10:40*	*10/24/19 18:45*	*1*
Toluene-d8 (Surr)	*102*		*71 - 139*	*10/23/19 10:40*	*10/24/19 18:45*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10400	5180	ug/Sample		10/23/19 10:40	11/15/19 04:55	1
Hydrogen Fluoride	ND		2280	1040	ug/Sample		10/23/19 10:40	11/14/19 02:57	20

Client Sample ID: O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2

Lab Sample ID: 140-17066-15

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,1,3,3-Pentafluorobutane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,1-Trichloroethane	ND		26.3	3.79	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.6	10.4	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,1-Trifluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,2,2-Tetrachloroethane	ND		26.3	5.05	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.6	2.95	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,2-trichloro-1-fluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1,2-Trichloroethane	ND		26.3	2.74	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-Dichloro-1-fluoroethane	ND		52.6	26.3	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-dichloro-2,2-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-dichloro-2,2-difluoroethene	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-Dichloroethane	ND		26.3	3.16	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-Dichloroethene	ND		26.3	3.90	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-Dichloropropene	ND		26.3	2.84	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,1-Difluoroethene	ND		526	526	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2,3-Trichlorobenzene	ND		26.3	8.42	ug/Sample		10/23/19 10:40	10/24/19 19:09	1

Client Sample ID: O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2

Lab Sample ID: 140-17066-15

Date Collected: 10/16/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		26.3	6.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2,4-Trichlorobenzene	ND		26.3	8.84	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2,4-Trimethylbenzene	ND		26.3	5.48	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-Dibromo-3-Chloropropane	ND		52.6	9.27	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-Dibromoethane (EDB)	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-dichloro-1,1-difluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-Dichlorobenzene	ND		26.3	4.63	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-Dichloroethane	ND		26.3	4.42	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,2-Dichloropropane	ND		26.3	2.63	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,3,5-Trimethylbenzene	ND		26.3	5.48	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,3-Dichlorobenzene	ND		26.3	4.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,3-Dichloropropane	ND		26.3	2.95	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1,4-Dichlorobenzene	ND		26.3	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
1-Chloro-1,1-difluoroethane	ND		52.6	5.37	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2,2-Dichloropropane	ND		26.3	7.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-Butanone (MEK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.6	7.79	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.6	5.26	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-Chlorotoluene	ND		26.3	4.95	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-Hexanone	ND		105	24.2	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
2-MTP as HFPO	ND		23.0	23.0	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
4-Chlorotoluene	ND		26.3	5.48	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
4-Isopropyltoluene	ND		26.3	7.05	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
4-Methyl-2-pentanone (MIBK)	ND		105	16.8	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Acetone	ND		105	62.1	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Benzene	ND		26.3	5.05	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Bromobenzene	ND		26.3	3.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Bromochloromethane	ND		26.3	5.90	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Bromodichloromethane	ND		26.3	4.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Bromoform	ND		26.3	8.00	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Bromomethane	ND	*	52.6	30.5	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Carbon disulfide	ND		26.3	6.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Carbon tetrachloride	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Chlorobenzene	ND		26.3	3.79	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Chlorodibromomethane	ND		26.3	5.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Chloroethane	ND		52.6	11.6	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Chloroform	ND		26.3	3.05	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Chloromethane	ND		52.6	21.9	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
cis-1,2-Dichloroethene	ND		26.3	2.11	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
cis-1,3-Dichloropropene	ND		26.3	4.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Dibromomethane	ND		26.3	2.53	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Dichlorodifluoromethane	ND		52.6	9.27	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Ethylbenzene	ND		26.3	4.32	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.3	26.3	ug/Sample		10/23/19 10:40	10/24/19 19:09	1

Client Sample ID: O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2

Lab Sample ID: 140-17066-15

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND		26.3	6.95	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
HFPO dimer, methyl ester as HFPO-DA	ND		25.2	25.2	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Isopropylbenzene	ND		26.3	3.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
m,p-Xylene	ND		52.6	4.32	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Methylene Chloride	**194**		26.3	16.8	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Naphthalene	ND		26.3	12.6	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
n-Butylbenzene	ND		26.3	6.74	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
n-Propylbenzene	ND		26.3	5.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
o-Xylene	ND		26.3	2.74	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
sec-Butylbenzene	ND		26.3	5.16	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Styrene	ND		26.3	5.69	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
tert-Butylbenzene	ND		26.3	4.63	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Tetrachloroethene	ND		26.3	3.47	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Toluene	ND		26.3	4.84	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
trans-1,2-Dichloroethene	ND		26.3	2.74	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
trans-1,3-Dichloropropene	ND		26.3	9.27	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Trichloroethene	ND		26.3	1.90	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Trichlorofluoromethane	ND	*	52.6	5.05	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Vinyl chloride	ND		52.6	12.6	ug/Sample		10/23/19 10:40	10/24/19 19:09	1
Carbonyl Difluoride	ND		76.9	76.9	ug/Sample		10/23/19 10:40	10/24/19 19:09	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/24/19 19:09*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*70 - 160*	*10/23/19 10:40*	*10/24/19 19:09*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:40*	*10/24/19 19:09*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:40*	*10/24/19 19:09*	*1*
Toluene-d8 (Surr)	*103*		*71 - 139*	*10/23/19 10:40*	*10/24/19 19:09*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10500	5260	ug/Sample		10/23/19 10:40	11/15/19 06:02	1
Hydrogen Fluoride	ND		2320	1050	ug/Sample		10/23/19 10:40	11/14/19 03:18	20

Client Sample ID: O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2

Lab Sample ID: 140-17066-16

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,1,3,3-Pentafluorobutane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,1-Trichloroethane	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		52.0	10.3	ug/Sample		10/23/19 10:40	10/24/19 19:34	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2

Lab Sample ID: 140-17066-16

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trifluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,2,2-Tetrachloroethane	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		52.0	2.91	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,2-trichloro-1-fluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1,2-Trichloroethane	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-Dichloro-1-fluoroethane	ND		52.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-dichloro-2,2-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-dichloro-2,2-difluoroethene	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-Dichloroethane	ND		26.0	3.12	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-Dichloroethene	ND		26.0	3.85	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-Dichloropropene	ND		26.0	2.81	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,1-Difluoroethene	ND		520	520	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2,2-trichloro-1,1-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2,3-Trichlorobenzene	ND		26.0	8.32	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2,3-Trichloropropane	ND		26.0	6.45	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2,4-Trichlorobenzene	ND		26.0	8.74	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2,4-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-Dibromo-3-Chloropropane	ND		52.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-Dibromoethane (EDB)	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-dichloro-1,1-difluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-Dichlorobenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-Dichloroethane	ND		26.0	4.37	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,2-Dichloropropane	ND		26.0	2.60	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,3,5-Trimethylbenzene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,3-Dichlorobenzene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,3-Dichloropropane	ND		26.0	2.91	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1,4-Dichlorobenzene	ND		26.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
1-Chloro-1,1-difluoroethane	ND		52.0	5.31	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2,2-Dichloropropane	ND		26.0	7.59	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-Butanone (MEK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		52.0	7.70	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-Chloro-1,1,1-Trifluoroethane	ND		52.0	5.20	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-Chlorotoluene	ND		26.0	4.89	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-Hexanone	ND		104	23.9	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
2-MTP as HFPO	ND		22.7	22.7	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
4-Chlorotoluene	ND		26.0	5.41	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
4-Isopropyltoluene	ND		26.0	6.97	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
4-Methyl-2-pentanone (MIBK)	ND		104	16.6	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Acetone	ND		104	61.4	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Benzene	ND		26.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Bromobenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Bromochloromethane	ND		26.0	5.83	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Bromodichloromethane	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Bromoform	ND		26.0	7.91	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Bromomethane	ND	*	52.0	30.2	ug/Sample		10/23/19 10:40	10/24/19 19:34	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2

Lab Sample ID: 140-17066-16

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon disulfide	ND		26.0	6.45	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Carbon tetrachloride	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Chlorobenzene	ND		26.0	3.75	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Chlorodibromomethane	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Chloroethane	ND		52.0	11.4	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Chloroform	ND		26.0	3.02	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Chloromethane	ND		52.0	21.6	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
cis-1,2-Dichloroethene	ND		26.0	2.08	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
cis-1,3-Dichloropropene	ND		26.0	4.47	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Dibromomethane	ND		26.0	2.50	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Dichlorodifluoromethane	ND		52.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Ethylbenzene	ND		26.0	4.27	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		26.0	26.0	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Hexachlorobutadiene	ND		26.0	6.87	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
HFPO dimer, methyl ester as HFPO-DA	ND		24.9	24.9	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Isopropylbenzene	ND		26.0	3.64	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
m,p-Xylene	ND		52.0	4.27	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Methylene Chloride	ND		26.0	16.6	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Naphthalene	ND		26.0	12.5	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
n-Butylbenzene	ND		26.0	6.66	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
n-Propylbenzene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
o-Xylene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
sec-Butylbenzene	ND		26.0	5.10	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Styrene	ND		26.0	5.62	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
tert-Butylbenzene	ND		26.0	4.58	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Tetrachloroethene	ND		26.0	3.43	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Toluene	ND		26.0	4.79	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
trans-1,2-Dichloroethene	ND		26.0	2.71	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
trans-1,3-Dichloropropene	ND		26.0	9.16	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Trichloroethene	ND		26.0	1.87	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Trichlorofluoromethane	ND	*	52.0	4.99	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Vinyl chloride	ND		52.0	12.5	ug/Sample		10/23/19 10:40	10/24/19 19:34	1
Carbonyl Difluoride	ND		76.2	76.2	ug/Sample		10/23/19 10:40	10/24/19 19:34	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/24/19 19:34*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*70 - 160*	*10/23/19 10:40*	*10/24/19 19:34*	*1*
4-Bromofluorobenzene (Surr)	*94*		*57 - 152*	*10/23/19 10:40*	*10/24/19 19:34*	*1*
Dibromofluoromethane (Surr)	*84*		*62 - 134*	*10/23/19 10:40*	*10/24/19 19:34*	*1*
Toluene-d8 (Surr)	*104*		*71 - 139*	*10/23/19 10:40*	*10/24/19 19:34*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10400	5200	ug/Sample		10/23/19 10:40	11/15/19 06:22	1

Client Sample ID: O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2

Lab Sample ID: 140-17066-16

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 9056 - Anions, Ion Chromatography (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		2290	1040	ug/Sample		10/23/19 10:40	11/14/19 03:39	20

Client Sample ID: O-2780 QC DIV AMBIENT AIR/WGS INLET MEOH RB

Lab Sample ID: 140-17066-17

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		61.6	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,1,3,3-Pentafluorobutane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,1-Trichloroethane	ND		61.6	8.88	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		123	24.4	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,2,2-Tetrachloroethane	ND		61.6	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		123	6.90	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,2-trichloro-1-fluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1,2-Trichloroethane	ND		61.6	6.41	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-Dichloro-1-fluoroethane	ND		123	61.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-dichloro-2,2-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-dichloro-2,2-difluoroethene	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-Dichloroethane	ND		61.6	7.40	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-Dichloroethene	ND		61.6	9.12	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-Dichloropropene	ND		61.6	6.66	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,1-Difluoroethene	ND		1230	1230	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2,2-trichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2,3-Trichlorobenzene	ND		61.6	19.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2,3-Trichloropropane	ND		61.6	15.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2,4-Trichlorobenzene	ND		61.6	20.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2,4-Trimethylbenzene	ND		61.6	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-Dibromo-3-Chloropropane	ND		123	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-Dibromoethane (EDB)	ND		61.6	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-dichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-Dichlorobenzene	ND		61.6	10.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-Dichloroethane	ND		61.6	10.4	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,2-Dichloropropane	ND		61.6	6.16	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,3,5-Trimethylbenzene	ND		61.6	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,3-Dichlorobenzene	ND		61.6	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,3-Dichloropropane	ND		61.6	6.90	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1,4-Dichlorobenzene	ND		61.6	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
1-Chloro-1,1-difluoroethane	ND		123	12.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2,2-Dichloropropane	ND		61.6	18.0	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2-Butanone (MEK)	ND		247	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		123	18.2	ug/Sample		10/23/19 10:40	10/23/19 17:08	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2780 QC DIV AMBIENT AIR/WGS INLET MEOH RB

Lab Sample ID: 140-17066-17

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloro-1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2-Chlorotoluene	ND		61.6	11.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2-Hexanone	ND		247	56.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
2-MTP as HFPO	ND		53.8	53.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
4-Chlorotoluene	ND		61.6	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
4-Isopropyltoluene	ND		61.6	16.5	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
4-Methyl-2-pentanone (MIBK)	ND		247	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Acetone	ND		247	145	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Benzene	ND		61.6	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Bromobenzene	ND		61.6	8.63	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Bromochloromethane	ND		61.6	13.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Bromodichloromethane	ND		61.6	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Bromoform	ND		61.6	18.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Bromomethane	ND	*	123	71.5	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Carbon disulfide	ND		61.6	15.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Carbon tetrachloride	ND		61.6	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Chlorobenzene	ND		61.6	8.88	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Chlorodibromomethane	ND		61.6	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Chloroethane	ND		123	27.1	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Chloroform	ND		61.6	7.15	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Chloromethane	ND		123	51.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
cis-1,2-Dichloroethene	ND		61.6	4.93	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
cis-1,3-Dichloropropene	ND		61.6	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Dibromomethane	ND		61.6	5.92	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Dichlorodifluoromethane	ND		123	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Ethylbenzene	ND		61.6	10.1	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		61.6	61.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Hexachlorobutadiene	ND		61.6	16.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
HFPO dimer, methyl ester as HFPO-DA	ND		59.1	59.1	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Isopropylbenzene	ND		61.6	8.63	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
m,p-Xylene	ND		123	10.1	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Methylene Chloride	ND		61.6	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Naphthalene	ND		61.6	29.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
n-Butylbenzene	ND		61.6	15.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
n-Propylbenzene	ND		61.6	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
o-Xylene	ND		61.6	6.41	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
sec-Butylbenzene	ND		61.6	12.1	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Styrene	ND		61.6	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
tert-Butylbenzene	ND		61.6	10.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Tetrachloroethene	ND		61.6	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Toluene	ND		61.6	11.3	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
trans-1,2-Dichloroethene	ND		61.6	6.41	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
trans-1,3-Dichloropropene	ND		61.6	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Trichloroethene	ND		61.6	4.44	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Trichlorofluoromethane	ND	*	123	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:08	1
Vinyl chloride	ND		123	29.6	ug/Sample		10/23/19 10:40	10/23/19 17:08	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2780 QC DIV AMBIENT AIR/WGS INLET MEOH RB

Lab Sample ID: 140-17066-17

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonyl Difluoride	ND		181	181	ug/Sample		10/23/19 10:40	10/23/19 17:08	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/23/19 17:08*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*70 - 160*	*10/23/19 10:40*	*10/23/19 17:08*	*1*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*	*10/23/19 10:40*	*10/23/19 17:08*	*1*
Dibromofluoromethane (Surr)	*82*		*62 - 134*	*10/23/19 10:40*	*10/23/19 17:08*	*1*
Toluene-d8 (Surr)	*105*		*71 - 139*	*10/23/19 10:40*	*10/23/19 17:08*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		24700	12300	ug/Sample		10/23/19 10:40	11/12/19 18:59	1
Hydrogen Fluoride	ND		5420	2470	ug/Sample		10/23/19 10:40	11/12/19 15:45	20

Client Sample ID: O-2781 QC DIV AMBIENT AIR/WGS INLET MEOH TB

Lab Sample ID: 140-17066-18

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Matrix: Air

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		61.7	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,1,3,3-Pentafluorobutane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,1-Trichloroethane	ND		61.7	8.88	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		123	24.4	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,2,2-Tetrachloroethane	ND		61.7	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		123	6.91	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,2-trichloro-1-fluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1,2-Trichloroethane	ND		61.7	6.42	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-Dichloro-1-fluoroethane	ND		123	61.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-dichloro-2,2-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-dichloro-2,2-difluoroethene	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-Dichloroethane	ND		61.7	7.40	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-Dichloroethene	ND		61.7	9.13	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-Dichloropropene	ND		61.7	6.66	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,1-Difluoroethene	ND		1230	1230	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2,2-trichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2,3-Trichlorobenzene	ND		61.7	19.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2,3-Trichloropropane	ND		61.7	15.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2,4-Trichlorobenzene	ND		61.7	20.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2,4-Trimethylbenzene	ND		61.7	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2-Dibromo-3-Chloropropane	ND		123	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2-Dibromoethane (EDB)	ND		61.7	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2-dichloro-1,1-difluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2781 QC DIV AMBIENT AIR/WGS INLET MEOH TB

Lab Sample ID: 140-17066-18

Date Collected: 10/13/19 00:00

Matrix: Air

Date Received: 10/21/19 08:45

Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dichlorobenzene	ND		61.7	10.9	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2-Dichloroethane	ND		61.7	10.4	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,2-Dichloropropane	ND		61.7	6.17	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,3,5-Trimethylbenzene	ND		61.7	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,3-Dichlorobenzene	ND		61.7	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,3-Dichloropropane	ND		61.7	6.91	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1,4-Dichlorobenzene	ND		61.7	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
1-Chloro-1,1-difluoroethane	ND		123	12.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2,2-Dichloropropane	ND		61.7	18.0	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-Butanone (MEK)	ND		247	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		123	18.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-Chloro-1,1,1-Trifluoroethane	ND		123	12.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-Chlorotoluene	ND		61.7	11.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-Hexanone	ND		247	56.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
2-MTP as HFPO	ND		53.9	53.9	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
4-Chlorotoluene	ND		61.7	12.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
4-Isopropyltoluene	ND		61.7	16.5	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
4-Methyl-2-pentanone (MIBK)	ND		247	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Acetone	ND		247	146	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Benzene	ND		61.7	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Bromobenzene	ND		61.7	8.64	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Bromochloromethane	ND		61.7	13.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Bromodichloromethane	ND		61.7	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Bromoform	ND		61.7	18.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Bromomethane	ND	*	123	71.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Carbon disulfide	ND		61.7	15.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Carbon tetrachloride	ND		61.7	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Chlorobenzene	ND		61.7	8.88	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Chlorodibromomethane	ND		61.7	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Chloroethane	ND		123	27.1	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Chloroform	ND		61.7	7.16	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Chloromethane	ND		123	51.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
cis-1,2-Dichloroethene	ND		61.7	4.94	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
cis-1,3-Dichloropropene	ND		61.7	10.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Dibromomethane	ND		61.7	5.92	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Dichlorodifluoromethane	ND		123	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Ethylbenzene	ND		61.7	10.1	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		61.7	61.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Hexachlorobutadiene	ND		61.7	16.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
HFPO dimer, methyl ester as HFPO-DA	ND		59.2	59.2	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Isopropylbenzene	ND		61.7	8.64	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
m,p-Xylene	ND		123	10.1	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Methylene Chloride	ND		61.7	39.5	ug/Sample		10/23/19 10:40	10/23/19 17:33	1

Client Sample ID: O-2781 QC DIV AMBIENT AIR/WGS INLET MEOH TB

Lab Sample ID: 140-17066-18

Date Collected: 10/13/19 00:00
Matrix: Air
Date Received: 10/21/19 08:45
Sample Container: Plastic 250ml - unpreserved

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		61.7	29.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
n-Butylbenzene	ND		61.7	15.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
n-Propylbenzene	ND		61.7	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
o-Xylene	ND		61.7	6.42	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
sec-Butylbenzene	ND		61.7	12.1	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Styrene	ND		61.7	13.3	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
tert-Butylbenzene	ND		61.7	10.9	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Tetrachloroethene	ND		61.7	8.14	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Toluene	ND		61.7	11.4	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
trans-1,2-Dichloroethene	ND		61.7	6.42	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
trans-1,3-Dichloropropene	ND		61.7	21.7	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Trichloroethene	ND		61.7	4.44	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Trichlorofluoromethane	ND	*	123	11.8	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Vinyl chloride	ND		123	29.6	ug/Sample		10/23/19 10:40	10/23/19 17:33	1
Carbonyl Difluoride	ND		181	181	ug/Sample		10/23/19 10:40	10/23/19 17:33	1

Tentatively Identified Compound	*Est. Result*	*Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/23/19 17:33*	*1*

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*70 - 160*	*10/23/19 10:40*	*10/23/19 17:33*	*1*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*	*10/23/19 10:40*	*10/23/19 17:33*	*1*
Dibromofluoromethane (Surr)	*88*		*62 - 134*	*10/23/19 10:40*	*10/23/19 17:33*	*1*
Toluene-d8 (Surr)	*105*		*71 - 139*	*10/23/19 10:40*	*10/23/19 17:33*	*1*

Method: 9056 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		24700	12300	ug/Sample		10/23/19 10:40	11/12/19 19:20	1
Hydrogen Fluoride	ND		5430	2470	ug/Sample		10/23/19 10:40	11/12/19 16:05	20

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: MeOH Prep

Analyte	RL	MDL	Units
1,1,1,2-Tetrachloroethane	2.50	0.330	ug/Sample
1,1,1,3,3-Pentafluorobutane	5.00	0.500	ug/Sample
1,1,1-Trichloroethane	2.50	0.360	ug/Sample
1,1,1-Trifluoro-2,2-dichloroethane	5.00	0.990	ug/Sample
1,1,1-Trifluoroethane	5.00	0.500	ug/Sample
1,1,2,2-Tetrachloroethane	2.50	0.480	ug/Sample
1,1,2-Trichloro-1,2,2-trifluoroethane	5.00	0.280	ug/Sample
1,1,2-trichloro-1-fluoroethane	5.00	0.500	ug/Sample
1,1,2-Trichloroethane	2.50	0.260	ug/Sample
1,1-Dichloro-1-fluoroethane	5.00	2.50	ug/Sample
1,1-dichloro-2,2-difluoroethane	5.00	0.500	ug/Sample
1,1-dichloro-2,2-difluoroethene	5.00	0.500	ug/Sample
1,1-Dichloroethane	2.50	0.300	ug/Sample
1,1-Dichloroethene	2.50	0.370	ug/Sample
1,1-Dichloropropene	2.50	0.270	ug/Sample
1,1-Difluoroethene	50.0	50.0	ug/Sample
1,2,2-trichloro-1,1-difluoroethane	5.00	0.500	ug/Sample
1,2,3-Trichlorobenzene	2.50	0.800	ug/Sample
1,2,3-Trichloropropane	2.50	0.620	ug/Sample
1,2,4-Trichlorobenzene	2.50	0.840	ug/Sample
1,2,4-Trimethylbenzene	2.50	0.520	ug/Sample
1,2-Dibromo-3-Chloropropane	5.00	0.880	ug/Sample
1,2-Dibromoethane (EDB)	2.50	0.330	ug/Sample
1,2-dichloro-1,1-difluoroethane	5.00	0.500	ug/Sample
1,2-Dichlorobenzene	2.50	0.440	ug/Sample
1,2-Dichloroethane	2.50	0.420	ug/Sample
1,2-Dichloropropane	2.50	0.250	ug/Sample
1,3,5-Trimethylbenzene	2.50	0.520	ug/Sample
1,3-Dichlorobenzene	2.50	0.430	ug/Sample
1,3-Dichloropropane	2.50	0.280	ug/Sample
1,4-Dichlorobenzene	2.50	0.500	ug/Sample
1-Chloro-1,1-difluoroethane	5.00	0.510	ug/Sample
2,2-dichloro-1,1-difluoroethylmethyl ether	5.00	0.500	ug/Sample
2,2-Dichloropropane	2.50	0.730	ug/Sample
2-Butanone (MEK)	10.0	1.60	ug/Sample
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	5.00	0.740	ug/Sample
2-Chloro-1,1,1-Trifluoroethane	5.00	0.500	ug/Sample
2-Chlorotoluene	2.50	0.470	ug/Sample
2-Hexanone	10.0	2.30	ug/Sample
2-MTP as HFPO	2.50	2.50	ug/Sample
4-Chlorotoluene	2.50	0.520	ug/Sample
4-Isopropyltoluene	2.50	0.670	ug/Sample
4-Methyl-2-pentanone (MIBK)	10.0	1.60	ug/Sample
Acetone	10.0	5.90	ug/Sample
Benzene	2.50	0.480	ug/Sample
Bromobenzene	2.50	0.350	ug/Sample
Bromochloromethane	2.50	0.560	ug/Sample
Bromodichloromethane	2.50	0.430	ug/Sample
Bromoform	2.50	0.760	ug/Sample
Bromomethane	5.00	2.90	ug/Sample
Carbon disulfide	2.50	0.620	ug/Sample
Carbon tetrachloride	2.50	0.330	ug/Sample

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Prep: MeOH Prep

Analyte	RL	MDL	Units
Carbonyl Difluoride	10.0	10.0	ug/Sample
Chlorobenzene	2.50	0.360	ug/Sample
Chlorodibromomethane	2.50	0.540	ug/Sample
Chloroethane	5.00	1.10	ug/Sample
Chloroform	2.50	0.290	ug/Sample
Chloromethane	5.00	2.08	ug/Sample
cis-1,2-Dichloroethene	2.50	0.200	ug/Sample
cis-1,3-Dichloropropene	2.50	0.430	ug/Sample
Dibromomethane	2.50	0.240	ug/Sample
Dichlorodifluoromethane	5.00	0.880	ug/Sample
Ethylbenzene	2.50	0.410	ug/Sample
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	2.50	2.50	ug/Sample
Hexachlorobutadiene	2.50	0.660	ug/Sample
HFPO dimer, methyl ester as HFPO-DA	2.50	2.50	ug/Sample
Isopropylbenzene	2.50	0.350	ug/Sample
m,p-Xylene	5.00	0.410	ug/Sample
Methylene Chloride	2.50	1.60	ug/Sample
Naphthalene	2.50	1.20	ug/Sample
n-Butylbenzene	2.50	0.640	ug/Sample
n-Propylbenzene	2.50	0.540	ug/Sample
o-Xylene	2.50	0.260	ug/Sample
sec-Butylbenzene	2.50	0.490	ug/Sample
Styrene	2.50	0.540	ug/Sample
tert-Butylbenzene	2.50	0.440	ug/Sample
Tetrachloroethene	2.50	0.330	ug/Sample
Toluene	2.50	0.460	ug/Sample
trans-1,2-Dichloroethene	2.50	0.260	ug/Sample
trans-1,3-Dichloropropene	2.50	0.880	ug/Sample
Trichloroethene	2.50	0.180	ug/Sample
Trichlorofluoromethane	5.00	0.480	ug/Sample
Vinyl chloride	5.00	1.20	ug/Sample

Method: 9056 - Anions, Ion Chromatography

Prep: MeOH Prep

Analyte	RL	MDL	Units
Hydrogen Fluoride	11.0	5.00	ug/Sample
Total Fluorine	1000	500	ug/Sample

Surrogate Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Air

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (70-160)	BFB (57-152)	DBFM (62-134)	TOL (71-139)
140-17066-1	O-2764 QC SCRUBBER OUTLE	90	96	85	103
140-17066-1 MS	O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1	90	95	86	104
140-17066-1 MSD	O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1	93	96	83	105
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1	91	94	85	104
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1	96	100	81	106
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1	92	96	84	103
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1	94	92	81	103
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1	92	91	85	104
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1	93	93	82	101
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1	92	92	82	104
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2	94	96	82	104
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2	95	94	82	104
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2	94	95	86	104
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2	93	93	82	104
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2	89	94	84	103
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2	95	95	83	102
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2	92	95	84	103
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2	91	94	84	104
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEOH RB	94	95	82	105
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEOH TB	96	97	88	105
LCS 140-34631/1-A	Lab Control Sample	93	97	84	105
LCS 140-34631/1-A	Lab Control Sample	97	96	93	103
MB 140-34631/2-A	Method Blank	93	91	85	107

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 140-34631/2-A
Matrix: Air
Analysis Batch: 34629

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34631

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		2.50	0.330	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,1,3,3-Pentafluorobutane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,1-Trichloroethane	ND		2.50	0.360	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,1-Trifluoro-2,2-dichloroethane	ND		5.00	0.990	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,2,2-Tetrachloroethane	ND		2.50	0.480	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		5.00	0.280	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,2-trichloro-1-fluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1,2-Trichloroethane	ND		2.50	0.260	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-Dichloro-1-fluoroethane	ND		5.00	2.50	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-dichloro-2,2-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-dichloro-2,2-difluoroethene	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-Dichloroethane	ND		2.50	0.300	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-Dichloroethene	ND		2.50	0.370	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-Dichloropropene	ND		2.50	0.270	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,1-Difluoroethene	ND		50.0	50.0	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2,2-trichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2,3-Trichlorobenzene	ND		2.50	0.800	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2,3-Trichloropropane	ND		2.50	0.620	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2,4-Trichlorobenzene	ND		2.50	0.840	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2,4-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-Dibromo-3-Chloropropane	ND		5.00	0.880	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-Dibromoethane (EDB)	ND		2.50	0.330	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-dichloro-1,1-difluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-Dichlorobenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-Dichloroethane	ND		2.50	0.420	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,2-Dichloropropane	ND		2.50	0.250	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,3,5-Trimethylbenzene	ND		2.50	0.520	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,3-Dichlorobenzene	ND		2.50	0.430	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,3-Dichloropropane	ND		2.50	0.280	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1,4-Dichlorobenzene	ND		2.50	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
1-Chloro-1,1-difluoroethane	ND		5.00	0.510	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2,2-dichloro-1,1-difluoroethylmethyl ether	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2,2-Dichloropropane	ND		2.50	0.730	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-Butanone (MEK)	ND		10.0	1.60	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-chloro-1,1,1,4,4,4-hexafluoro-2-butene	ND		5.00	0.740	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-Chloro-1,1,1-Trifluoroethane	ND		5.00	0.500	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-Chlorotoluene	ND		2.50	0.470	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-Hexanone	ND		10.0	2.30	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
2-MTP as HFPO	ND		2.18	2.18	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
4-Chlorotoluene	ND		2.50	0.520	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
4-Isopropyltoluene	ND		2.50	0.670	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
4-Methyl-2-pentanone (MIBK)	ND		10.0	1.60	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Acetone	ND		10.0	5.90	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Benzene	ND		2.50	0.480	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Bromobenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Bromochloromethane	ND		2.50	0.560	ug/Sample		10/23/19 10:40	10/23/19 16:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 140-34631/2-A
Matrix: Air
Analysis Batch: 34629

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34631

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	ND		2.50	0.430	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Bromoform	ND		2.50	0.760	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Bromomethane	ND		5.00	2.90	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Carbon disulfide	ND		2.50	0.620	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Carbon tetrachloride	ND		2.50	0.330	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Chlorobenzene	ND		2.50	0.360	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Chlorodibromomethane	ND		2.50	0.540	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Chloroethane	ND		5.00	1.10	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Chloroform	ND		2.50	0.290	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Chloromethane	ND		5.00	2.08	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
cis-1,2-Dichloroethene	ND		2.50	0.200	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
cis-1,3-Dichloropropene	ND		2.50	0.430	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Dibromomethane	ND		2.50	0.240	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Dichlorodifluoromethane	ND		5.00	0.880	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Ethylbenzene	ND		2.50	0.410	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		2.50	2.50	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Hexachlorobutadiene	ND		2.50	0.660	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
HFPO dimer, methyl ester as HFPO-DA	ND		2.40	2.40	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Isopropylbenzene	ND		2.50	0.350	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
m,p-Xylene	ND		5.00	0.410	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Methylene Chloride	ND		2.50	1.60	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Naphthalene	ND		2.50	1.20	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
n-Butylbenzene	ND		2.50	0.640	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
n-Propylbenzene	ND		2.50	0.540	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
o-Xylene	ND		2.50	0.260	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
sec-Butylbenzene	ND		2.50	0.490	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Styrene	ND		2.50	0.540	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
tert-Butylbenzene	ND		2.50	0.440	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Tetrachloroethene	ND		2.50	0.330	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Toluene	ND		2.50	0.460	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
trans-1,2-Dichloroethene	ND		2.50	0.260	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
trans-1,3-Dichloropropene	ND		2.50	0.880	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Trichloroethene	ND		2.50	0.180	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Trichlorofluoromethane	ND		5.00	0.480	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Vinyl chloride	ND		5.00	1.20	ug/Sample		10/23/19 10:40	10/23/19 16:19	1
Carbonyl Difluoride	ND		7.33	7.33	ug/Sample		10/23/19 10:40	10/23/19 16:19	1

Tentatively Identified Compound	*MB Est. Result*	*MB Qualifier*	*Unit*	*D*	*RT*	*CAS No.*	*Prepared*	*Analyzed*	*Dil Fac*
Tentatively Identified Compound	*None*		*ug/Sample*				*10/23/19 10:40*	*10/23/19 16:19*	*1*

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*	*10/23/19 10:40*	*10/23/19 16:19*	*1*
4-Bromofluorobenzene (Surr)	*91*		*57 - 152*	*10/23/19 10:40*	*10/23/19 16:19*	*1*
Dibromofluoromethane (Surr)	*85*		*62 - 134*	*10/23/19 10:40*	*10/23/19 16:19*	*1*
Toluene-d8 (Surr)	*107*		*71 - 139*	*10/23/19 10:40*	*10/23/19 16:19*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34631/1-A
Matrix: Air
Analysis Batch: 34629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34631

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	23.60		ug/Sample		94	80 - 138
1,1,1-Trichloroethane	25.0	22.12		ug/Sample		88	80 - 140
1,1,2,2-Tetrachloroethane	25.0	29.46		ug/Sample		118	64 - 146
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	26.89		ug/Sample		108	40 - 160
1,1,2-Trichloroethane	25.0	26.48		ug/Sample		106	80 - 126
1,1-Dichloroethane	25.0	25.66		ug/Sample		103	80 - 134
1,1-Dichloroethene	25.0	28.86		ug/Sample		115	65 - 147
1,1-Dichloropropene	25.0	28.09		ug/Sample		112	80 - 142
1,2,3-Trichlorobenzene	25.0	28.11		ug/Sample		112	70 - 135
1,2,3-Trichloropropane	25.0	27.99		ug/Sample		112	67 - 146
1,2,4-Trichlorobenzene	25.0	28.62		ug/Sample		114	75 - 129
1,2,4-Trimethylbenzene	25.0	22.83		ug/Sample		91	65 - 127
1,2-Dibromo-3-Chloropropane	25.0	26.59		ug/Sample		106	64 - 132
1,2-Dibromoethane (EDB)	25.0	27.64		ug/Sample		111	80 - 125
1,2-Dichlorobenzene	25.0	26.97		ug/Sample		108	74 - 136
1,2-Dichloroethane	25.0	26.61		ug/Sample		106	72 - 138
1,2-Dichloropropane	25.0	26.64		ug/Sample		107	80 - 129
1,3,5-Trimethylbenzene	25.0	30.39		ug/Sample		122	50 - 136
1,3-Dichlorobenzene	25.0	27.36		ug/Sample		109	80 - 132
1,3-Dichloropropane	25.0	26.05		ug/Sample		104	68 - 136
1,4-Dichlorobenzene	25.0	27.20		ug/Sample		109	78 - 134
2,2-Dichloropropane	25.0	31.95		ug/Sample		128	80 - 150
2-Butanone (MEK)	100	118.4		ug/Sample		118	36 - 160
2-Chlorotoluene	25.0	27.01		ug/Sample		108	61 - 130
2-Hexanone	100	134.0		ug/Sample		134	33 - 150
4-Chlorotoluene	25.0	26.92		ug/Sample		108	49 - 140
4-Isopropyltoluene	25.0	32.31		ug/Sample		129	64 - 134
4-Methyl-2-pentanone (MIBK)	100	129.2		ug/Sample		129	31 - 140
Acetone	100	95.75		ug/Sample		96	61 - 150
Benzene	25.0	25.81		ug/Sample		103	69 - 132
Bromobenzene	25.0	27.84		ug/Sample		111	78 - 127
Bromochloromethane	25.0	27.06		ug/Sample		108	80 - 127
Bromodichloromethane	25.0	24.84		ug/Sample		99	78 - 140
Bromoform	25.0	22.00		ug/Sample		88	61 - 150
Bromomethane	50.0	83.09	*	ug/Sample		166	30 - 120
Carbon disulfide	25.0	27.42		ug/Sample		110	34 - 150
Carbon tetrachloride	25.0	27.56		ug/Sample		110	80 - 137
Chlorobenzene	25.0	26.15		ug/Sample		105	64 - 142
Chlorodibromomethane	25.0	25.09		ug/Sample		100	72 - 146
Chloroethane	50.0	56.48		ug/Sample		113	20 - 120
Chloroform	25.0	25.43		ug/Sample		102	80 - 134
Chloromethane	50.0	52.75		ug/Sample		105	54 - 150
cis-1,2-Dichloroethene	25.0	24.81		ug/Sample		99	80 - 129
cis-1,3-Dichloropropene	25.0	26.75		ug/Sample		107	80 - 138
Dibromomethane	25.0	26.41		ug/Sample		106	80 - 130
Dichlorodifluoromethane	50.0	63.08		ug/Sample		126	24 - 150
Dimethyl carbonate	99.9	128.7		ug/Sample		129	
Ethylbenzene	25.0	29.25		ug/Sample		117	74 - 136

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 140-34631/1-A
Matrix: Air
Analysis Batch: 34629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34631

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hexachlorobutadiene	25.0	31.85		ug/Sample		127	77 - 146
Isopropylbenzene	25.0	30.43		ug/Sample		122	53 - 150
m,p-Xylene	25.0	28.50		ug/Sample		114	55 - 148
Methylene Chloride	25.0	22.69		ug/Sample		91	72 - 136
Naphthalene	25.0	31.41		ug/Sample		126	45 - 141
n-Butylbenzene	25.0	32.47		ug/Sample		130	61 - 137
n-Propylbenzene	25.0	28.50		ug/Sample		114	44 - 144
o-Xylene	25.0	28.60		ug/Sample		114	65 - 140
sec-Butylbenzene	25.0	31.29		ug/Sample		125	64 - 132
Styrene	25.0	28.75		ug/Sample		115	56 - 145
tert-Butylbenzene	25.0	28.43		ug/Sample		114	72 - 128
Tetrachloroethene	25.0	29.03		ug/Sample		116	80 - 134
Toluene	25.0	25.72		ug/Sample		103	68 - 123
trans-1,2-Dichloroethene	25.0	27.29		ug/Sample		109	76 - 140
trans-1,3-Dichloropropene	25.0	28.17		ug/Sample		113	78 - 138
Trichloroethene	25.0	28.07		ug/Sample		112	80 - 136
Trichlorofluoromethane	50.0	78.15	*	ug/Sample		156	46 - 121
Vinyl chloride	50.0	41.10		ug/Sample		82	65 - 160

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 160*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*
Dibromofluoromethane (Surr)	*93*		*62 - 134*
Toluene-d8 (Surr)	*103*		*71 - 139*

Lab Sample ID: LCS 140-34631/1-A
Matrix: Air
Analysis Batch: 34629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34631

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	25.0	26.15		ug/Sample		105	50 - 150
Methyl 2-methoxytetrafluoropropionate	24.9	24.59		ug/Sample		99	70 - 130
Methyl undecafluoro-2-methyl-3-oxahexanoate	24.9	28.57		ug/Sample		115	

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*97*		*57 - 152*
Dibromofluoromethane (Surr)	*84*		*62 - 134*
Toluene-d8 (Surr)	*105*		*71 - 139*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 140-17066-1 MS — **Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34666 — **Prep Batch: 34631**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		264	276.0		ug/Sample			
Methyl 2-methoxytetrafluoropropionate	ND		263	262.5		ug/Sample			
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		263	287.4		ug/Sample			

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 160*
4-Bromofluorobenzene (Surr)	*95*		*57 - 152*
Dibromofluoromethane (Surr)	*86*		*62 - 134*
Toluene-d8 (Surr)	*104*		*71 - 139*

Lab Sample ID: 140-17066-1 MSD — **Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 34666 — **Prep Batch: 34631**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptafluoropropyl 1,2,2,2-tetrafluoroethyl ether	ND		264	277.4		ug/Sample		105	50 - 150	0	30
Methyl 2-methoxytetrafluoropropionate	ND		263	273.5		ug/Sample		104	70 - 130	4	30
Methyl undecafluoro-2-methyl-3-oxahexanoate	ND		263	296.1		ug/Sample		113		3	

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*70 - 160*
4-Bromofluorobenzene (Surr)	*96*		*57 - 152*
Dibromofluoromethane (Surr)	*83*		*62 - 134*
Toluene-d8 (Surr)	*105*		*71 - 139*

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: MB 140-34631/2-C — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35360 — **Prep Batch: 34631**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		1000	500	ug/Sample		10/23/19 10:40	11/14/19 22:35	1

Lab Sample ID: LCS 140-34631/24-B — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 35360 — **Prep Batch: 34631**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Fluorine	1000000	929400		ug/Sample		93	80 - 120

Method: 9056 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 140-34631/25-B
Matrix: Air
Analysis Batch: 35360

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 34631

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine			1000000	920600		ug/Sample		92	80 - 120	1	10

Lab Sample ID: MB 140-34633/25-B
Matrix: Air
Analysis Batch: 35270

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10000	5000	ug/Sample		11/08/19 08:00	11/12/19 23:48	1

Lab Sample ID: LCS 140-34633/26-B
Matrix: Air
Analysis Batch: 35270

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34633

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Fluorine			1000000	914600		ug/Sample		91	80 - 120		

Lab Sample ID: MB 140-34636/13-B
Matrix: Air
Analysis Batch: 35360

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34636

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Fluorine	ND		10000	5000	ug/Sample		11/08/19 08:00	11/14/19 17:18	1

Lab Sample ID: LCS 140-34636/14-B
Matrix: Air
Analysis Batch: 35360

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34636

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Fluorine			1000000	906500		ug/Sample		91	80 - 120		

Lab Sample ID: LCSD 140-34636/15-B
Matrix: Air
Analysis Batch: 35360

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 34636

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Fluorine			1000000	910900		ug/Sample		91	80 - 120	0	10

Lab Sample ID: MB 140-35034/1-B
Matrix: Air
Analysis Batch: 35271

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 35036

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		110000	50000	ug/Sample		11/06/19 12:36	11/12/19 13:17	1

Lab Sample ID: MB 140-35034/1-B
Matrix: Air
Analysis Batch: 35297

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 35036

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		110000	50000	ug/Sample		11/06/19 12:36	11/13/19 16:20	1

Method: 9056 - Anions, Ion Chromatography

Lab Sample ID: LCS 140-35297/4
Matrix: Air
Analysis Batch: 35297

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	2630	2490		ug/Sample		95	90 - 110

Lab Sample ID: LCSD 140-35297/5
Matrix: Air
Analysis Batch: 35297

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	2630	2484		ug/Sample		94	90 - 110	0	20

Lab Sample ID: MB 140-35359/3
Matrix: Air
Analysis Batch: 35359

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen Fluoride	ND		1100	500	ug/Sample			11/14/19 10:16	1

Lab Sample ID: LCS 140-35359/4
Matrix: Air
Analysis Batch: 35359

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hydrogen Fluoride	2630	2508		ug/Sample		95	90 - 110

Lab Sample ID: LCSD 140-35359/5
Matrix: Air
Analysis Batch: 35359

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hydrogen Fluoride	2630	2489		ug/Sample		95	90 - 110	1	20

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

GC/MS VOA

Analysis Batch: 34629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	8260B	34631
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	8260B	34631
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	8260B	34631
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	8260B	34631
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	8260B	34631
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	8260B	34631
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	8260B	34631
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	8260B	34631
MB 140-34631/2-A	Method Blank	Total/NA	Air	8260B	34631
LCS 140-34631/1-A	Lab Control Sample	Total/NA	Air	8260B	34631
LCS 140-34631/1-A	Lab Control Sample	Total/NA	Air	8260B	34631

Prep Batch: 34631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	MeOH Prep	
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	MeOH Prep	
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	MeOH Prep	
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	MeOH Prep	
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	MeOH Prep	
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	MeOH Prep	
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	MeOH Prep	
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	MeOH Prep	
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	MeOH Prep	
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	MeOH Prep	
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	MeOH Prep	
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	MeOH Prep	
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	MeOH Prep	
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	MeOH Prep	
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	MeOH Prep	
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	MeOH Prep	
MB 140-34631/2-A	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34631/1-A	Lab Control Sample	Total/NA	Air	MeOH Prep	
140-17066-1 MS	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	
140-17066-1 MSD	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	

Analysis Batch: 34666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	8260B	34631
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	8260B	34631
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	8260B	34631
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	8260B	34631
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	8260B	34631
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	8260B	34631
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	8260B	34631
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	8260B	34631
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	8260B	34631
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	8260B	34631
140-17066-1 MS	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	8260B	34631
140-17066-1 MSD	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	8260B	34631

HPLC/IC

Prep Batch: 34631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	MeOH Prep	
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	MeOH Prep	
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	MeOH Prep	
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	MeOH Prep	
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	MeOH Prep	
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	MeOH Prep	
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	MeOH Prep	
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	MeOH Prep	
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	MeOH Prep	
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	MeOH Prep	
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	MeOH Prep	
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	MeOH Prep	
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	MeOH Prep	
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	MeOH Prep	
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	MeOH Prep	
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	MeOH Prep	
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	MeOH Prep	
MB 140-34631/2-C	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34631/24-B	Lab Control Sample	Total/NA	Air	MeOH Prep	
LCSD 140-34631/25-B	Lab Control Sample Dup	Total/NA	Air	MeOH Prep	

Prep Batch: 34633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-34633/25-B	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	MeOH Prep	

Prep Batch: 34636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-34636/13-B	Method Blank	Total/NA	Air	MeOH Prep	
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	MeOH Prep	
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	MeOH Prep	

Leach Batch: 35034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-35034/1-B	Method Blank	Total/NA	Air	MeOH Prep	

Prep Batch: 35036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-35034/1-B	Method Blank	Total/NA	Air	5050	35034

Prep Batch: 35100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-34633/25-B	Method Blank	Total/NA	Air	5050	34633
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	5050	34633

Prep Batch: 35121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	5050	34631
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	5050	34631
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	5050	34631

HPLC/IC (Continued)

Prep Batch: 35121 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	5050	34631
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	5050	34631
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	5050	34631
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	5050	34631
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	5050	34631
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	5050	34631
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	5050	34631
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	5050	34631
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	5050	34631
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	5050	34631
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	5050	34631
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	5050	34631
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	5050	34631
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	5050	34631
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	5050	34631
MB 140-34631/2-C	Method Blank	Total/NA	Air	5050	34631
LCS 140-34631/24-B	Lab Control Sample	Total/NA	Air	5050	34631
LCSD 140-34631/25-B	Lab Control Sample Dup	Total/NA	Air	5050	34631

Prep Batch: 35175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-34636/13-B	Method Blank	Total/NA	Air	5050	34636
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	5050	34636
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	5050	34636

Analysis Batch: 35270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	9056	35121
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	9056	35121
MB 140-34633/25-B	Method Blank	Total/NA	Air	9056	35100
LCS 140-34633/26-B	Lab Control Sample	Total/NA	Air	9056	35100

Analysis Batch: 35271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	9056	34631
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC	Total/NA	Air	9056	34631
MB 140-35034/1-B	Method Blank	Total/NA	Air	9056	35036

Analysis Batch: 35297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	9056	34631
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	9056	34631
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	9056	34631
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	9056	34631
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	9056	34631
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	9056	34631
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	9056	34631
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	9056	34631
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	9056	34631
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	9056	34631
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	9056	34631

HPLC/IC (Continued)

Analysis Batch: 35297 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	9056	34631
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	9056	34631
MB 140-35034/1-B	Method Blank	Total/NA	Air	9056	35036
LCS 140-35297/4	Lab Control Sample	Total/NA	Air	9056	
LCSD 140-35297/5	Lab Control Sample Dup	Total/NA	Air	9056	

Analysis Batch: 35359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	9056	34631
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	9056	34631
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	9056	34631
MB 140-35359/3	Method Blank	Total/NA	Air	9056	
LCS 140-35359/4	Lab Control Sample	Total/NA	Air	9056	
LCSD 140-35359/5	Lab Control Sample Dup	Total/NA	Air	9056	

Analysis Batch: 35360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	9056	35121
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	9056	35121
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	9056	35121
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	9056	35121
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	9056	35121
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	9056	35121
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	9056	35121
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	9056	35121
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1	Total/NA	Air	9056	35121
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2	Total/NA	Air	9056	35121
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3	Total/NA	Air	9056	35121
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4	Total/NA	Air	9056	35121
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5	Total/NA	Air	9056	35121
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6	Total/NA	Air	9056	35121
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7	Total/NA	Air	9056	35121
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8	Total/NA	Air	9056	35121
MB 140-34631/2-C	Method Blank	Total/NA	Air	9056	35121
MB 140-34636/13-B	Method Blank	Total/NA	Air	9056	35175
LCS 140-34631/24-B	Lab Control Sample	Total/NA	Air	9056	35121
LCS 140-34636/14-B	Lab Control Sample	Total/NA	Air	9056	35175
LCSD 140-34631/25-B	Lab Control Sample Dup	Total/NA	Air	9056	35121
LCSD 140-34636/15-B	Lab Control Sample Dup	Total/NA	Air	9056	35175

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.53 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 17:57	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	105.53 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 11:25	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	105.53 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 23:41	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1

Lab Sample ID: 140-17066-2

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.12 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 18:22	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.12 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 11:45	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.12 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 00:02	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1

Lab Sample ID: 140-17066-3

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.38 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 18:46	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.38 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35359	11/14/19 12:06	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.38 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 00:22	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1

Lab Sample ID: 140-17066-4

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	106.36 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 19:11	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	106.36 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 22:45	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	106.36 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 00:43	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1

Lab Sample ID: 140-17066-5

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	107.16 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 19:35	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	107.16 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 23:05	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	107.16 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 01:45	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1

Lab Sample ID: 140-17066-6

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	106.26 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 20:00	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	106.26 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 23:26	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	106.26 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 02:06	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1

Lab Sample ID: 140-17066-7

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	103.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 15:49	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	103.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/13/19 23:47	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	103.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 02:26	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1

Lab Sample ID: 140-17066-8

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 16:14	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 00:53	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.86 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 02:47	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2

Lab Sample ID: 140-17066-9

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	108.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 16:38	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	108.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 01:14	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	108.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 03:10	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2

Lab Sample ID: 140-17066-10

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 17:03	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	105.10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 01:34	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	105.10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 03:33	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2

Lab Sample ID: 140-17066-11

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	108.55 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 17:27	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	108.55 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 01:55	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	108.55 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 03:53	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2

Lab Sample ID: 140-17066-12

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.05 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 17:52	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.05 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 02:16	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.05 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 04:14	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2

Lab Sample ID: 140-17066-13

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	108.52 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 18:20	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	108.52 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 02:36	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	108.52 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 04:35	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2

Lab Sample ID: 140-17066-14

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	103.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 18:45	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	103.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 02:57	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	103.60 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 04:55	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2

Lab Sample ID: 140-17066-15

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.29 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 19:09	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	105.29 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 03:18	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	105.29 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 06:02	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2

Lab Sample ID: 140-17066-16

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	104.04 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 19:34	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	104.04 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35297	11/14/19 03:39	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	104.04 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/15/19 06:22	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2780 QC DIV AMBIENT AIR/WGS INLET MEOH RB

Lab Sample ID: 140-17066-17

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	246.57 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 17:08	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	246.57 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 15:45	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	246.57 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/12/19 18:59	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: O-2781 QC DIV AMBIENT AIR/WGS INLET MEOH TB

Lab Sample ID: 140-17066-18

Date Collected: 10/13/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	246.79 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 17:33	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	246.79 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35271	11/12/19 16:05	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Prep	MeOH Prep			1 Sample	246.79 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/12/19 19:20	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-34631/2-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 16:19	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-34631/2-C
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 22:35	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-34633/25-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34633	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35270	11/12/19 23:48	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-34636/13-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35360	11/14/19 17:18	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-35034/1-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	MeOH Prep			1 g	1 mL	35034	11/06/19 12:17	AKL	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35036	11/06/19 12:36	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35271	11/12/19 13:17	SMK	TAL KNX
	Instrument ID: 320									
Total/NA	Leach	MeOH Prep			1 g	1 mL	35034	11/06/19 12:17	AKL	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35036	11/06/19 12:36	AKL	TAL KNX
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 16:20	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-35359/3
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 10:16	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34631/1-A
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 15:30	BKK	TAL KNX
	Instrument ID: MK									
Total/NA	Prep	MeOH Prep			1 Sample	10 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34629	10/23/19 16:44	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34631/24-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34631	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100.9 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 22:57	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34633/26-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34633	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35100	11/08/19 08:41	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35270	11/13/19 00:08	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-34636/14-B
Date Collected: N/A
Matrix: Air
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 17:39	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 140-35297/4
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 16:43	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCS 140-35359/4
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 10:39	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-34631/25-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34631	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 g	100 mL	35121	11/08/19 12:49	PLH	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 23:20	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-34636/15-B
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	100 mL	34636	11/08/19 08:00	BKK	TAL KNX
Total/NA	Prep	5050			1 mL	100 mL	35175	11/11/19 10:16	AKL	TAL KNX
Total/NA	Analysis	9056		20	10 mL	10 mL	35360	11/14/19 18:00	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-35297/5
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35297	11/13/19 17:05	SMK	TAL KNX
	Instrument ID: 320									

Client Sample ID: Lab Control Sample Dup
Date Collected: N/A
Date Received: N/A

Lab Sample ID: LCSD 140-35359/5
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056		1	10 mL	10 mL	35359	11/14/19 11:02	SMK	TAL KNX
	Instrument ID: 320									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1 MS

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.53 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 14:11	BKK	TAL KNX
	Instrument ID: MK									

Client Sample ID: O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1

Lab Sample ID: 140-17066-1 MSD

Date Collected: 10/16/19 00:00
Date Received: 10/21/19 08:45

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	MeOH Prep			1 Sample	105.53 mL	34631	10/23/19 10:40	BKK	TAL KNX
Total/NA	Analysis	8260B		1	100 uL	5 mL	34666	10/24/19 14:36	BKK	TAL KNX
	Instrument ID: MK									

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-17066-1
Project/Site: MM-18 QC Samples (Task .60)

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	2423	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	12-31-19
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-19
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-19
North Carolina (WW/SW)	State Program	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-01-20
Pennsylvania	NELAP	68-00576	12-31-19
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL KNX
9056	Anions, Ion Chromatography	SW846	TAL KNX
5050	Bomb Preparation Method for Solid Waste	SW846	TAL KNX
MeOH Prep	Methanol Impinger Preparation	None	TAL KNX

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: MM-18 QC Samples (Task .60)

Job ID: 140-17066-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-17066-1	O-2764 QC SCRUBBER OUTLET IMPINGER #1 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-2	O-2765 QC SCRUBBER OUTLET IMPINGER #2 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-3	O-2766 QC SCRUBBER OUTLET IMPINGER #3 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-4	O-2767 QC SCRUBBER OUTLET IMPINGER #4 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-5	O-2768 QC SCRUBBER OUTLET IMPINGER #5 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-6	O-2769 QC SCRUBBER OUTLET IMPINGER #6 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-7	O-2770 QC SCRUBBER OUTLET IMPINGER #7 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-8	O-2771 QC SCRUBBER OUTLET IMPINGER #8 BT #1	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-9	O-2772 QC SCRUBBER OUTLET IMPINGER #1 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-10	O-2773 QC SCRUBBER OUTLET IMPINGER #2 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-11	O-2774 QC SCRUBBER OUTLET IMPINGER #3 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-12	O-2775 QC SCRUBBER OUTLET IMPINGER #4 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-13	O-2776 QC SCRUBBER OUTLET IMPINGER #5 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-14	O-2777 QC SCRUBBER OUTLET IMPINGER #6 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-15	O-2778 QC SCRUBBER OUTLET IMPINGER #7 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-16	O-2779 QC SCRUBBER OUTLET IMPINGER #8 BT #2	Air	10/16/19 00:00	10/21/19 08:45	
140-17066-17	O-2780 QC DIV AMBIENT AIR/WGS INLET MEC RB	Air	10/13/19 00:00	10/21/19 08:45	
140-17066-18	O-2781 QC DIV AMBIENT AIR/WGS INLET MEC TB	Air	10/13/19 00:00	10/21/19 08:45	

Request for Analysis/Chain-of-Custody – RFA/COC #002
Moose Creek Facility – North Pole, Alaska
Emissions Test by Modified Method 18 QC Field Samples – Task .60

eurofins
Environment Testing
TestAmerica

Project Identification:	Emissions Test on Scrubber Outlet
Client Name:	Alaska Source Air
Client Contact:	Mr. Bill Hudson Office: (907) 562-2880
TestAmerica Project Manager:	Ms. Courtney Adkins Office: (865) 291-3019
TestAmerica Program Manager:	Mr. Billy Anderson Office: (865) 291-3080 Cell: (865) 206-9004

Laboratory Deliverable Turnaround Requirements:	
Analytical Due Date: (Review-Released Data)	21 Days from Lab Receipt
Data Package Due Date:	28 Days from Lab Receipt

Analytical Testing QC Requirements:
The Legend for Project-Specific Quality Control Testing is designated in the "QC" column as follows: "BT" = Blank Train, "RB" = Reagent Blank, "MS" = Matrix Spike, "MSD" = Matrix Spike Duplicate, "DUP" = Duplicate, "PB" = Proof Blank, "TB" = Trip Blank

Laboratory Destination:	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921
Lab Phone Number:	865.291.3000
Courier:	FedEx

Project Deliverables:
Report analytical results on TALS Report form Std_Tal_L4. Include "Field Sample Number", "Sample Type", and "Run Number" on all TALS Reports.

Target Analytes (Target Analyte List):	Holding Time Requirements:	Preservation Requirements:
Fluoroether E-1, HFPO, Carbonyl Di-fluoride & Perfluoroacetyl fluoride (PAF)	14 Days to Analysis	Cool, 4°C
HFPO-DA & HFPO-DAF	14 Days to Extraction; 40 Days to Analysis	Cool, 4°C
pH	Analyze as soon as reasonably possible	None
Total Fluorine	30 Days to Analysis	None

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2764 QC Scrubber Outlet Impinger #1 BT #1	QC	10/16/19 140-17066 Chain of Custody	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2765 QC Scrubber Outlet Impinger #2 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2766 QC Scrubber Outlet Impinger #3 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2767 QC Scrubber Outlet Impinger #4 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2768 QC Scrubber Outlet Impinger #5 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2769 QC Scrubber Outlet Impinger #6 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2770 QC Scrubber Outlet Impinger #7 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2771 QC Scrubber Outlet Impinger #8 BT #1	QC	10/16/19	Blank Train #1	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2772 QC Scrubber Outlet Impinger #1 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #1 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2773 QC Scrubber Outlet Impinger #2 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #2 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2774 QC Scrubber Outlet Impinger #3 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #3 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2775 QC Scrubber Outlet Impinger #4 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #4 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2776 QC Scrubber Outlet Impinger #5 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #5 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2777 QC Scrubber Outlet Impinger #6 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #6 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Field Sample No./Sample Coding ID	Run No.	Sample Collection Date	Project QC Require-ments	Sample Bottle/ Container	Sample Type/Analysis	Analytical Specifications
O-2778 QC Scrubber Outlet Impinger #7 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #7 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2779 QC Scrubber Outlet Impinger #8 BT #2	QC	10/16/19	Blank Train #2	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Impinger Contents #8 with Methanol Rinses** Modified Method 18 Blank Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2780 QC DIV Ambient Air/WGS Inlet MeOH RB	QC	10/13/19	Reagent Blank	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Methanol Reagent Blank** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.
O-2781 QC DIV Ambient Air/WGS Inlet MeOH TB	QC	10/13/19	Trip Blank	250 mL HDPE Wide-Mouth Bottle	**Scrubber Outlet Methanol Trip Blank** Modified Method 18 Train	Record the sample weight on the Companion Field Sheet. Analyze target volatile PFAS analytes by EPA Method 8260. Analyze HFPO-DA by EPA Method 8321A/537 in Denver. Measure pH by 5041A. Analyze for Total Fluorine by EPA Method 5050/9056.

Sample Receipt Log and Condition of the Samples Upon Receipt:

Please fill in the following information:	Comments (Please write "NONE" if no comment applicable)
(1) Record the identities of any samples that were listed on the RFA but were not found in the sample shipment.	NONE
(2) Record the sample shipping cooler temperature of all coolers transporting samples listed on this RFA:	RT 17.4 / CT 17.4
(3) Record any apparent sample loss/breakage.	NONE
(4) Record any unidentified samples transported with this shipment of samples:	NONE
(5) Indicate if all samples were received according to the project's required specifications (i.e. no nonconformances):	NO CUSTODY SEALS, 1 DRUM FED X# 4912 6060 1856 PD

Custody Transfer:

	Name	Company	Date/Time
Relinquished By:	Doug Cahill	ETA	10/17/19 11:40
Accepted By:		AST	10/17/19 11:40
Relinquished By:		AST	10/18/19 11:30
Accepted By:		ETA-KNX	10-21-19 08:45
Relinquished By:			
Accepted By:			
Relinquished By:			
Accepted By:			

Loc: 140
17066

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓			☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SG68 Correction factor: 0.0	✓	✓		☑ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?			✓	☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

4.

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 10-21-19

QA026R32.doc, 062719

1/30/2020

APPENDIX E: Test America Soil and Ancillary Sample Analytical Results

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-18101-1
Client Project/Site: EPA OIT/NRC PFAS Test

For:
U.S. Environmental Protection Agency
109 TW Alexander Drive
Research Triangle, North Carolina 27711

Attn: Jeff Ryan

Authorized for release by:
2/18/2020 9:35:21 AM

Courtney Adkins, Project Manager II
(865)291-3000
courtney.adkins@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 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.

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Definitions/Glossary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-18101-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-18101-1

Sample Receipt

The samples were received on January 30, 2020 at 9:15 AM. The temperature of the cooler at receipt was 8.6º C.

Receipt Exceptions

All samples were received at the laboratory outside the required temperature criteria.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The COC has no relinquished date or time.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC list sample as solid it should be water.

The following samples were received outside of holding time: STAKE 66 (140-18101-1), STAKE 66 (140-18101-1[MS]), STAKE 66 (140-18101-1[MSD]), BAGHOUSE (140-18101-2), STAKE 67 (140-18101-3), STAKE 68 (140-18101-4), STAKE 69 (140-18101-5), STAKE 70 (140-18101-6), SCRUBBER WATER (140-18101-7), SCRUBBER WATER (140-18101-7[MS]), SCRUBBER WATER (140-18101-7[MSD]), FRESH WATER (140-18101-8) and PRETREATED SOIL 1 (140-18101-9).

Quality Control and Data Interpretation

Unless otherwise noted, all holding times, and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

LCMS

Method 537 (modified): The sample duplicate (DUP) precision for Perfluorobutanoic acid (PFBA) and Perfluoroheptanoic acid (PFHpA) forpreparation batch 320-354584 and analytical batch 320-355234 was outside control limits. Sample matrix interference is suspected.

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

General Chemistry

Method Moisture: No percent moisture was found in the following sample in analytical batch 320-354660 due to hygroscopic characteristics. The matrix of the sample was dry, powdery sand. The sample was reweighed and there was no change in weight. Sample was not reanalyzed and is being reported with this narration. BAGHOUSE (140-18101-2)

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

Organic Prep

Method 3535: The following samples have sediment at the bottom of the sample bottle prior to extraction: SCRUBBER WATER (140-18101-7) and (140-18101-A-7 DU).

Method 3535: The following samples have floating particulates inside the sample bottle prior to extraction: FRESH WATER (140-18101-8).

Method 3535: During the extraction process, the following samples have non-settleable particulates which clogged the solid-phase extraction column: SCRUBBER WATER (140-18101-7) and (140-18101-A-7 DU).

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1
Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0537**	**J H H3 B**	0.192	0.0268	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.192	0.0738	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorohexanoic acid (PFHxA)	**0.0752**	**J H H3**	0.192	0.0402	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.192	0.0278	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.192	0.0824	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorodecanoic acid (PFDA)	**0.0257**	**J H H3**	0.192	0.0211	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroundecanoic acid (PFUnA)	**0.0702**	**J H H3**	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.192	0.0642	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.192	0.0489	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.192	0.0517	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.192	0.0239	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.192	0.0192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0582**	**J H H3**	0.192	0.0297	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.192	0.0335	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanesulfonic acid (PFOS)	**0.440**	**J H H3**	0.479	0.192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.192	0.0192	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.192	0.0374	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.192	0.0575	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.192	0.0785	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NEtFOSA	ND	H H3	0.192	0.0230	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NMeFOSA	ND	H H3	0.192	0.0393	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.92	0.374	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.92	0.354	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NMeFOSE	ND	H H3	0.192	0.0680	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
NEtFOSE	ND	H H3	0.192	0.0345	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
4:2 FTS	ND	H H3	1.92	0.354	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
6:2 FTS	ND	H H3	1.92	0.144	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
8:2 FTS	ND	H H3	1.92	0.239	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
10:2 FTS	ND	H H3	0.192	0.0479	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
DONA	ND	H H3	0.192	0.0172	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
HFPO-DA (GenX)	ND	H H3	0.239	0.105	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
F-53B Major	ND	H H3	0.192	0.0259	ug/Kg		02/03/20 11:18	02/10/20 23:12	1
F-53B Minor	ND	H H3	0.192	0.0211	ug/Kg		02/03/20 11:18	02/10/20 23:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C5 PFPeA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFHxA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C4 PFHpA	*72*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C4 PFOA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C5 PFNA	*75*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFDA	*74*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*
13C2 PFUnA	*80*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:12*	*1*

Client Sample ID: STAKE 66

Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1

Matrix: Solid

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	86		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C2 PFTeDA	86		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C3 PFBS	71		25 - 150	02/03/20 11:18	02/10/20 23:12	1
18O2 PFHxS	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C4 PFOS	67		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C8 FOSA	63		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d3-NMeFOSAA	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d5-NEtFOSAA	85		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d-N-MeFOSA-M	57		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d-N-EtFOSA-M	56		25 - 150	02/03/20 11:18	02/10/20 23:12	1
d7-N-MeFOSE-M	12		10 - 120	02/03/20 11:18	02/10/20 23:12	1
d9-N-EtFOSE-M	13		10 - 120	02/03/20 11:18	02/10/20 23:12	1
M2-4:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 23:12	1
M2-6:2 FTS	68		25 - 150	02/03/20 11:18	02/10/20 23:12	1
M2-8:2 FTS	73		25 - 150	02/03/20 11:18	02/10/20 23:12	1
13C3 HFPO-DA	60		25 - 150	02/03/20 11:18	02/10/20 23:12	1

Client Sample ID: BAGHOUSE

Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0430**	**J H H3 B**	0.187	0.0262	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.187	0.0721	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.187	0.0393	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.187	0.0272	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.187	0.0805	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.187	0.0206	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.187	0.0627	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.187	0.0478	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.187	0.0506	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.187	0.0234	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.187	0.0187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.187	0.0290	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.187	0.0328	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanesulfonic acid (PFOS)	**0.209**	**J H H3**	0.468	0.187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.187	0.0187	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.187	0.0365	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.187	0.0562	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.187	0.0768	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NEtFOSA	ND	H H3	0.187	0.0225	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NMeFOSA	ND	H H3	0.187	0.0384	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.87	0.365	ug/Kg		02/03/20 11:18	02/10/20 23:42	1

Client Sample ID: BAGHOUSE

Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.87	0.346	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NMeFOSE	ND	H H3	0.187	0.0665	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
NEtFOSE	ND	H H3	0.187	0.0337	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
4:2 FTS	ND	H H3	1.87	0.346	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
6:2 FTS	ND	H H3	1.87	0.140	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
8:2 FTS	ND	H H3	1.87	0.234	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
10:2 FTS	ND	H H3	0.187	0.0468	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
DONA	ND	H H3	0.187	0.0169	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
HFPO-DA (GenX)	ND	H H3	0.234	0.103	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
F-53B Major	ND	H H3	0.187	0.0253	ug/Kg		02/03/20 11:18	02/10/20 23:42	1
F-53B Minor	ND	H H3	0.187	0.0206	ug/Kg		02/03/20 11:18	02/10/20 23:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C5 PFPeA	*59*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFHxA	*67*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFHpA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFOA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C5 PFNA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFDA	*74*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFUnA	*77*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFDoA	*79*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C2 PFTeDA	*75*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C3 PFBS	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
18O2 PFHxS	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C4 PFOS	*60*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C8 FOSA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d3-NMeFOSAA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d5-NEtFOSAA	*66*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d-N-MeFOSA-M	*32*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d-N-EtFOSA-M	*29*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d7-N-MeFOSE-M	*12*		*10 - 120*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
d9-N-EtFOSE-M	*12*		*10 - 120*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-4:2 FTS	*41*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-6:2 FTS	*39*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
M2-8:2 FTS	*42*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*
13C3 HFPO-DA	*56*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:42*	*1*

Client Sample ID: STAKE 67

Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0335**	**J H H3 B**	0.196	0.0274	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.196	0.0753	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.196	0.0411	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.196	0.0284	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.196	0.0841	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 67
Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.196	0.0656	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.196	0.0499	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.196	0.0528	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.196	0.0245	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0330**	**J H H3**	0.196	0.0303	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.196	0.0342	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.489	0.196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.196	0.0382	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.196	0.0587	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.196	0.0802	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NEtFOSA	ND	H H3	0.196	0.0235	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NMeFOSA	ND	H H3	0.196	0.0401	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	0.382	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NMeFOSE	ND	H H3	0.196	0.0695	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
NEtFOSE	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
4:2 FTS	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
6:2 FTS	ND	H H3	1.96	0.147	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
8:2 FTS	ND	H H3	1.96	0.245	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
10:2 FTS	ND	H H3	0.196	0.0489	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
DONA	ND	H H3	0.196	0.0176	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
HFPO-DA (GenX)	ND	H H3	0.245	0.108	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
F-53B Major	ND	H H3	0.196	0.0264	ug/Kg		02/03/20 11:18	02/10/20 23:52	1
F-53B Minor	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/10/20 23:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C5 PFPeA	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFHxA	*66*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFHpA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFOA	*70*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C5 PFNA	*68*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFDA	*71*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFUnA	*76*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFDoA	*77*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C3 PFBS	*65*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
18O2 PFHxS	*64*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C4 PFOS	*63*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
13C8 FOSA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*02/03/20 11:18*	*02/10/20 23:52*	*1*

Client Sample ID: STAKE 67

Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3

Matrix: Solid

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d-N-MeFOSA-M	51		25 - 150	02/03/20 11:18	02/10/20 23:52	1
d-N-EtFOSA-M	51		25 - 150	02/03/20 11:18	02/10/20 23:52	1
d7-N-MeFOSE-M	20		10 - 120	02/03/20 11:18	02/10/20 23:52	1
d9-N-EtFOSE-M	22		10 - 120	02/03/20 11:18	02/10/20 23:52	1
M2-4:2 FTS	66		25 - 150	02/03/20 11:18	02/10/20 23:52	1
M2-6:2 FTS	60		25 - 150	02/03/20 11:18	02/10/20 23:52	1
M2-8:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 23:52	1
13C3 HFPO-DA	62		25 - 150	02/03/20 11:18	02/10/20 23:52	1

Client Sample ID: STAKE 68

Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0319**	**J H H3 B**	0.182	0.0255	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.182	0.0700	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.182	0.0382	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.182	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.182	0.0782	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.182	0.0609	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.182	0.0464	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.182	0.0491	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.182	0.0227	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.182	0.0282	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.182	0.0318	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.455	0.182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.182	0.0355	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.182	0.0545	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.182	0.0745	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NEtFOSA	ND	H H3	0.182	0.0218	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NMeFOSA	ND	H H3	0.182	0.0373	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.82	0.355	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.82	0.336	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NMeFOSE	ND	H H3	0.182	0.0645	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
NEtFOSE	ND	H H3	0.182	0.0327	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
4:2 FTS	ND	H H3	1.82	0.336	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
6:2 FTS	ND	H H3	1.82	0.136	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
8:2 FTS	ND	H H3	1.82	0.227	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
10:2 FTS	ND	H H3	0.182	0.0455	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
DONA	ND	H H3	0.182	0.0164	ug/Kg		02/03/20 11:18	02/11/20 00:02	1

Client Sample ID: STAKE 68

Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA (GenX)	ND	H H3	0.227	0.100	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
F-53B Major	ND	H H3	0.182	0.0245	ug/Kg		02/03/20 11:18	02/11/20 00:02	1
F-53B Minor	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C5 PFPeA	*64*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFHxA	*71*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFHpA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFOA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C5 PFNA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFDA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFUnA	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFDoA	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C3 PFBS	*70*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
18O2 PFHxS	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C4 PFOS	*71*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C8 FOSA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d3-NMeFOSAA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d5-NEtFOSAA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d-N-MeFOSA-M	*62*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d-N-EtFOSA-M	*61*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d7-N-MeFOSE-M	*32*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
d9-N-EtFOSE-M	*32*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-4:2 FTS	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-6:2 FTS	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
M2-8:2 FTS	*109*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*
13C3 HFPO-DA	*59*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:02*	*1*

Client Sample ID: STAKE 69

Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5

Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0525**	**J H H3 B**	0.196	0.0274	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.196	0.0753	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.196	0.0411	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.196	0.0284	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.196	0.0841	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.196	0.0656	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.196	0.0499	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.196	0.0528	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.196	0.0245	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.196	0.0303	ug/Kg		02/03/20 11:18	02/11/20 00:12	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 69
Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.196	0.0342	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	0.489	0.196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.196	0.0196	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.196	0.0382	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.196	0.0587	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.196	0.0802	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NEtFOSA	ND	H H3	0.196	0.0235	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NMeFOSA	ND	H H3	0.196	0.0401	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	0.382	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NMeFOSE	ND	H H3	0.196	0.0695	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
NEtFOSE	ND	H H3	0.196	0.0352	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
4:2 FTS	ND	H H3	1.96	0.362	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
6:2 FTS	ND	H H3	1.96	0.147	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
8:2 FTS	ND	H H3	1.96	0.245	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
10:2 FTS	ND	H H3	0.196	0.0489	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
DONA	ND	H H3	0.196	0.0176	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
HFPO-DA (GenX)	ND	H H3	0.245	0.108	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
F-53B Major	ND	H H3	0.196	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:12	1
F-53B Minor	ND	H H3	0.196	0.0215	ug/Kg		02/03/20 11:18	02/11/20 00:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C5 PFPeA	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFHxA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFHpA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFOA	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C5 PFNA	*76*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFDA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFUnA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFDoA	*84*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C3 PFBS	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
18O2 PFHxS	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C4 PFOS	*72*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C8 FOSA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d3-NMeFOSAA	*74*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d-N-MeFOSA-M	*59*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d-N-EtFOSA-M	*60*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d7-N-MeFOSE-M	*28*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
d9-N-EtFOSE-M	*28*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-4:2 FTS	*66*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-6:2 FTS	*63*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
M2-8:2 FTS	*106*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*
13C3 HFPO-DA	*64*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:12*	*1*

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 70
Date Collected: 10/16/19 14:25
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-6
Matrix: Solid

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0659**	**J H H3 B**	0.171	0.0239	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoropentanoic acid (PFPeA)	ND	H H3	0.171	0.0658	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorohexanoic acid (PFHxA)	ND	H H3	0.171	0.0359	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroheptanoic acid (PFHpA)	ND	H H3	0.171	0.0248	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanoic acid (PFOA)	ND	H H3	0.171	0.0735	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorononanoic acid (PFNA)	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorodecanoic acid (PFDA)	ND	H H3	0.171	0.0188	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.171	0.0573	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.171	0.0436	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.171	0.0462	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.171	0.0214	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	0.171	0.0171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	0.171	0.0265	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.171	0.0299	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanesulfonic acid (PFOS)	**0.177**	**J H H3**	0.427	0.171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.171	0.0171	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.171	0.0333	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.171	0.0513	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.171	0.0701	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NEtFOSA	ND	H H3	0.171	0.0205	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NMeFOSA	ND	H H3	0.171	0.0350	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.71	0.333	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.71	0.316	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NMeFOSE	ND	H H3	0.171	0.0607	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
NEtFOSE	ND	H H3	0.171	0.0308	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
4:2 FTS	ND	H H3	1.71	0.316	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
6:2 FTS	ND	H H3	1.71	0.128	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
8:2 FTS	ND	H H3	1.71	0.214	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
10:2 FTS	ND	H H3	0.171	0.0427	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
DONA	ND	H H3	0.171	0.0154	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
HFPO-DA (GenX)	ND	H H3	0.214	0.0940	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
F-53B Major	ND	H H3	0.171	0.0231	ug/Kg		02/03/20 11:18	02/12/20 02:52	1
F-53B Minor	ND	H H3	0.171	0.0188	ug/Kg		02/03/20 11:18	02/12/20 02:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C5 PFPeA	*78*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFHxA	*87*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFHpA	*92*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFOA	*91*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C5 PFNA	*94*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFDA	*93*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFUnA	*101*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFDoA	*98*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*

Client Sample ID: STAKE 70

Lab Sample ID: 140-18101-6

Date Collected: 10/16/19 14:25
Matrix: Solid
Date Received: 01/30/20 09:15

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 PFBS	*84*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
18O2 PFHxS	*88*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C4 PFOS	*82*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C8 FOSA	*87*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d5-NEtFOSAA	*81*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d-N-MeFOSA-M	*54*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d-N-EtFOSA-M	*57*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d7-N-MeFOSE-M	*21*		*10 - 120*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
d9-N-EtFOSE-M	*24*		*10 - 120*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-4:2 FTS	*59*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-6:2 FTS	*65*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
M2-8:2 FTS	*82*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*02/03/20 11:18*	*02/12/20 02:52*	*1*

Client Sample ID: SCRUBBER WATER

Lab Sample ID: 140-18101-7

Date Collected: 10/16/19 15:05
Matrix: Water
Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.75**	**J H H3 B**	1.84	0.323	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoropentanoic acid (PFPeA)	**0.968**	**J H H3**	1.84	0.452	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorohexanoic acid (PFHxA)	**1.03**	**J H H3**	1.84	0.535	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroheptanoic acid (PFHpA)	**0.677**	**J H H3**	1.84	0.231	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanoic acid (PFOA)	**2.84**	**H H3**	1.84	0.784	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorononanoic acid (PFNA)	ND	H H3	1.84	0.249	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorodecanoic acid (PFDA)	ND	H H3	1.84	0.286	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	1.84	1.01	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.84	0.507	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.84	1.20	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.84	0.267	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.84	0.184	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.84	0.277	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3	1.84	0.157	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.84	0.175	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	1.84	0.498	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.84	0.148	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.84	0.295	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.84	0.415	ng/L		02/03/20 05:19	02/05/20 07:51	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.84	0.323	ng/L		02/03/20 05:19	02/05/20 07:51	1
NEtFOSA	ND	H H3	1.84	0.802	ng/L		02/03/20 05:19	02/05/20 07:51	1
NMeFOSA	ND	H H3	1.84	0.397	ng/L		02/03/20 05:19	02/05/20 07:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	18.4	2.86	ng/L		02/03/20 05:19	02/05/20 07:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	18.4	1.75	ng/L		02/03/20 05:19	02/05/20 07:51	1
NMeFOSE	ND	H H3	3.69	1.29	ng/L		02/03/20 05:19	02/05/20 07:51	1

Client Sample ID: SCRUBBER WATER

Lab Sample ID: 140-18101-7

Date Collected: 10/16/19 15:05

Matrix: Water

Date Received: 01/30/20 09:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
NEtFOSE	ND	H H3	1.84	0.784	ng/L		02/03/20 05:19	02/05/20 07:51	1
4:2 FTS	ND	H H3	18.4	4.80	ng/L		02/03/20 05:19	02/05/20 07:51	1
6:2 FTS	**4.04**	**J H H3**	18.4	1.84	ng/L		02/03/20 05:19	02/05/20 07:51	1
8:2 FTS	**3.40**	**J H H3**	18.4	1.84	ng/L		02/03/20 05:19	02/05/20 07:51	1
10:2 FTS	ND	H H3	1.84	0.175	ng/L		02/03/20 05:19	02/05/20 07:51	1
DONA	ND	H H3	1.84	0.166	ng/L		02/03/20 05:19	02/05/20 07:51	1
HFPO-DA (GenX)	ND	H H3	3.69	1.38	ng/L		02/03/20 05:19	02/05/20 07:51	1
F-53B Major	ND	H H3	1.84	0.221	ng/L		02/03/20 05:19	02/05/20 07:51	1
F-53B Minor	ND	H H3	1.84	0.295	ng/L		02/03/20 05:19	02/05/20 07:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*47*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C5 PFPeA	*71*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFHxA	*77*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFHpA	*82*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFOA	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C5 PFNA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFDA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFUnA	*76*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFDoA	*68*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C2 PFTeDA	*64*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C3 PFBS	*80*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
18O2 PFHxS	*82*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C4 PFOS	*80*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C8 FOSA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d5-NEtFOSAA	*63*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d-N-MeFOSA-M	*45*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d-N-EtFOSA-M	*38*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d7-N-MeFOSE-M	*32*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
d9-N-EtFOSE-M	*30*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*
13C3 HFPO-DA	*61*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:51*	*1*

Client Sample ID: FRESH WATER

Lab Sample ID: 140-18101-8

Date Collected: 10/16/19 15:20

Matrix: Water

Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.935**	**J H H3 B**	1.88	0.330	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoropentanoic acid (PFPeA)	**0.681**	**J H H3**	1.88	0.462	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorohexanoic acid (PFHxA)	**0.703**	**J H H3**	1.88	0.547	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroheptanoic acid (PFHpA)	**0.399**	**J H H3**	1.88	0.236	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanoic acid (PFOA)	**1.53**	**J H H3**	1.88	0.801	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorononanoic acid (PFNA)	ND	H H3	1.88	0.254	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorodecanoic acid (PFDA)	ND	H H3	1.88	0.292	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroundecanoic acid (PFUnA)	ND	H H3	1.88	1.04	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.88	0.518	ng/L		02/03/20 05:19	02/05/20 07:59	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: FRESH WATER
Date Collected: 10/16/19 15:20
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-8
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.88	1.23	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.88	0.273	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorobutanesulfonic acid (PFBS)	**0.250**	**J H H3**	1.88	0.188	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.88	0.283	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorohexanesulfonic acid (PFHxS)	**0.349**	**J H H3 B**	1.88	0.160	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.88	0.179	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanesulfonic acid (PFOS)	ND	H H3	1.88	0.509	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.88	0.151	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.88	0.302	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.88	0.424	ng/L		02/03/20 05:19	02/05/20 07:59	1
Perfluorooctanesulfonamide (FOSA)	**1.31**	**J H H3 B**	1.88	0.330	ng/L		02/03/20 05:19	02/05/20 07:59	1
NEtFOSA	ND	H H3	1.88	0.820	ng/L		02/03/20 05:19	02/05/20 07:59	1
NMeFOSA	ND	H H3	1.88	0.405	ng/L		02/03/20 05:19	02/05/20 07:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	18.8	2.92	ng/L		02/03/20 05:19	02/05/20 07:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	18.8	1.79	ng/L		02/03/20 05:19	02/05/20 07:59	1
NMeFOSE	ND	H H3	3.77	1.32	ng/L		02/03/20 05:19	02/05/20 07:59	1
NEtFOSE	ND	H H3	1.88	0.801	ng/L		02/03/20 05:19	02/05/20 07:59	1
4:2 FTS	ND	H H3	18.8	4.90	ng/L		02/03/20 05:19	02/05/20 07:59	1
6:2 FTS	ND	H H3	18.8	1.88	ng/L		02/03/20 05:19	02/05/20 07:59	1
8:2 FTS	ND	H H3	18.8	1.88	ng/L		02/03/20 05:19	02/05/20 07:59	1
10:2 FTS	ND	H H3	1.88	0.179	ng/L		02/03/20 05:19	02/05/20 07:59	1
DONA	ND	H H3	1.88	0.170	ng/L		02/03/20 05:19	02/05/20 07:59	1
HFPO-DA (GenX)	ND	H H3	3.77	1.41	ng/L		02/03/20 05:19	02/05/20 07:59	1
F-53B Major	ND	H H3	1.88	0.226	ng/L		02/03/20 05:19	02/05/20 07:59	1
F-53B Minor	ND	H H3	1.88	0.302	ng/L		02/03/20 05:19	02/05/20 07:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*75*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C5 PFPeA	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFHxA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFHpA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFOA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C5 PFNA	*97*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFDA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFUnA	*91*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFDoA	*86*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C3 PFBS	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
18O2 PFHxS	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C4 PFOS	*97*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C8 FOSA	*96*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d-N-MeFOSA-M	*64*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*

Client Sample ID: FRESH WATER

Lab Sample ID: 140-18101-8

Date Collected: 10/16/19 15:20
Matrix: Water
Date Received: 01/30/20 09:15

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d-N-EtFOSA-M	*56*		*20 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d7-N-MeFOSE-M	*43*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
d9-N-EtFOSE-M	*39*		*10 - 120*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-4:2 FTS	*87*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-6:2 FTS	*84*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
M2-8:2 FTS	*86*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*
13C3 HFPO-DA	*81*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:59*	*1*

Client Sample ID: PRETREATED SOIL 1

Lab Sample ID: 140-18101-9

Date Collected: 10/11/19 14:30
Matrix: Solid
Date Received: 01/30/20 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.120**	**J H H3 B**	0.182	0.0255	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoropentanoic acid (PFPeA)	**0.281**	**H H3**	0.182	0.0701	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorohexanoic acid (PFHxA)	**0.222**	**H H3**	0.182	0.0383	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroheptanoic acid (PFHpA)	**0.176**	**J H H3**	0.182	0.0264	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanoic acid (PFOA)	**0.238**	**H H3**	0.182	0.0783	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorononanoic acid (PFNA)	**0.0797**	**J H H3**	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorodecanoic acid (PFDA)	**0.0250**	**J H H3**	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroundecanoic acid (PFUnA)	**0.0524**	**J H H3**	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorododecanoic acid (PFDoA)	ND	H H3	0.182	0.0610	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorotridecanoic acid (PFTriA)	ND	H H3	0.182	0.0464	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	0.182	0.0492	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	0.182	0.0228	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoropentanesulfonic acid (PFPeS)	**0.0230**	**J H H3**	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorohexanesulfonic acid (PFHxS)	**0.331**	**H H3**	0.182	0.0282	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	0.182	0.0319	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanesulfonic acid (PFOS)	**1.48**	**H H3**	0.455	0.182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorononanesulfonic acid (PFNS)	ND	H H3	0.182	0.0182	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	0.182	0.0355	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	0.182	0.0546	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
Perfluorooctanesulfonamide (FOSA)	ND	H H3	0.182	0.0747	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NEtFOSA	ND	H H3	0.182	0.0219	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NMeFOSA	ND	H H3	0.182	0.0373	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.82	0.355	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.82	0.337	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NMeFOSE	**0.0778**	**J H H3**	0.182	0.0647	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
NEtFOSE	ND	H H3	0.182	0.0328	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
4:2 FTS	ND	H H3	1.82	0.337	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
6:2 FTS	ND	H H3	1.82	0.137	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
8:2 FTS	**0.506**	**J H H3**	1.82	0.228	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
10:2 FTS	**0.0636**	**J H H3**	0.182	0.0455	ug/Kg		02/03/20 11:18	02/11/20 00:32	1

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: PRETREATED SOIL 1
Date Collected: 10/11/19 14:30
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-9
Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DONA	ND	H H3	0.182	0.0164	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
HFPO-DA (GenX)	ND	H H3	0.228	0.100	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
F-53B Major	ND	H H3	0.182	0.0246	ug/Kg		02/03/20 11:18	02/11/20 00:32	1
F-53B Minor	ND	H H3	0.182	0.0200	ug/Kg		02/03/20 11:18	02/11/20 00:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*82*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C5 PFPeA	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFHxA	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFHpA	*89*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFOA	*84*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C5 PFNA	*87*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFDA	*95*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFUnA	*102*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFDoA	*100*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C2 PFTeDA	*103*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C3 PFBS	*81*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
18O2 PFHxS	*83*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C4 PFOS	*83*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C8 FOSA	*90*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d3-NMeFOSAA	*26*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d5-NEtFOSAA	*28*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d-N-MeFOSA-M	*66*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d-N-EtFOSA-M	*67*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d7-N-MeFOSE-M	*13*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
d9-N-EtFOSE-M	*13*		*10 - 120*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-4:2 FTS	*86*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-6:2 FTS	*65*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
M2-8:2 FTS	*75*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*
13C3 HFPO-DA	*73*		*25 - 150*	*02/03/20 11:18*	*02/11/20 00:32*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: 3535

Analyte	RL	MDL	Units
10:2 FTS	2.00	0.190	ng/L
4:2 FTS	20.0	5.20	ng/L
6:2 FTS	20.0	2.00	ng/L
8:2 FTS	20.0	2.00	ng/L
DONA	2.00	0.180	ng/L
F-53B Major	2.00	0.240	ng/L
F-53B Minor	2.00	0.320	ng/L
HFPO-DA (GenX)	4.00	1.50	ng/L
NEtFOSA	2.00	0.870	ng/L
NEtFOSE	2.00	0.850	ng/L
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20.0	1.90	ng/L
NMeFOSA	2.00	0.430	ng/L
NMeFOSE	4.00	1.40	ng/L
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20.0	3.10	ng/L
Perfluorobutanesulfonic acid (PFBS)	2.00	0.200	ng/L
Perfluorobutanoic acid (PFBA)	2.00	0.350	ng/L
Perfluorodecanesulfonic acid (PFDS)	2.00	0.320	ng/L
Perfluorodecanoic acid (PFDA)	2.00	0.310	ng/L
Perfluorododecanesulfonic acid (PFDoS)	2.00	0.450	ng/L
Perfluorododecanoic acid (PFDoA)	2.00	0.550	ng/L
Perfluoroheptanesulfonic Acid (PFHpS)	2.00	0.190	ng/L
Perfluoroheptanoic acid (PFHpA)	2.00	0.250	ng/L
Perfluorohexanesulfonic acid (PFHxS)	2.00	0.170	ng/L
Perfluorohexanoic acid (PFHxA)	2.00	0.580	ng/L
Perfluorononanesulfonic acid (PFNS)	2.00	0.160	ng/L
Perfluorononanoic acid (PFNA)	2.00	0.270	ng/L
Perfluorooctanesulfonamide (FOSA)	2.00	0.350	ng/L
Perfluorooctanesulfonic acid (PFOS)	2.00	0.540	ng/L
Perfluorooctanoic acid (PFOA)	2.00	0.850	ng/L
Perfluoropentanesulfonic acid (PFPeS)	2.00	0.300	ng/L
Perfluoropentanoic acid (PFPeA)	2.00	0.490	ng/L
Perfluorotetradecanoic acid (PFTeA)	2.00	0.290	ng/L
Perfluorotridecanoic acid (PFTriA)	2.00	1.30	ng/L
Perfluoroundecanoic acid (PFUnA)	2.00	1.10	ng/L

Method: 537 (modified) - Fluorinated Alkyl Substances

Prep: SHAKE

Analyte	RL	MDL	Units
10:2 FTS	0.200	0.0500	ug/Kg
4:2 FTS	2.00	0.370	ug/Kg
6:2 FTS	2.00	0.150	ug/Kg
8:2 FTS	2.00	0.250	ug/Kg
DONA	0.200	0.0180	ug/Kg
F-53B Major	0.200	0.0270	ug/Kg
F-53B Minor	0.200	0.0220	ug/Kg
HFPO-DA (GenX)	0.250	0.110	ug/Kg
NEtFOSA	0.200	0.0240	ug/Kg
NEtFOSE	0.200	0.0360	ug/Kg
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	0.370	ug/Kg

Default Detection Limits

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

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

Prep: SHAKE

Analyte	RL	MDL	Units
NMeFOSA	0.200	0.0410	ug/Kg
NMeFOSE	0.200	0.0710	ug/Kg
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	0.390	ug/Kg
Perfluorobutanesulfonic acid (PFBS)	0.200	0.0250	ug/Kg
Perfluorobutanoic acid (PFBA)	0.200	0.0280	ug/Kg
Perfluorodecanesulfonic acid (PFDS)	0.200	0.0390	ug/Kg
Perfluorodecanoic acid (PFDA)	0.200	0.0220	ug/Kg
Perfluorododecanesulfonic acid (PFDoS)	0.200	0.0600	ug/Kg
Perfluorododecanoic acid (PFDoA)	0.200	0.0670	ug/Kg
Perfluoroheptanesulfonic Acid (PFHpS)	0.200	0.0350	ug/Kg
Perfluoroheptanoic acid (PFHpA)	0.200	0.0290	ug/Kg
Perfluorohexanesulfonic acid (PFHxS)	0.200	0.0310	ug/Kg
Perfluorohexanoic acid (PFHxA)	0.200	0.0420	ug/Kg
Perfluorononanesulfonic acid (PFNS)	0.200	0.0200	ug/Kg
Perfluorononanoic acid (PFNA)	0.200	0.0360	ug/Kg
Perfluorooctanesulfonamide (FOSA)	0.200	0.0820	ug/Kg
Perfluorooctanesulfonic acid (PFOS)	0.500	0.200	ug/Kg
Perfluorooctanoic acid (PFOA)	0.200	0.0860	ug/Kg
Perfluoropentanesulfonic acid (PFPeS)	0.200	0.0200	ug/Kg
Perfluoropentanoic acid (PFPeA)	0.200	0.0770	ug/Kg
Perfluorotetradecanoic acid (PFTeA)	0.200	0.0540	ug/Kg
Perfluorotridecanoic acid (PFTriA)	0.200	0.0510	ug/Kg
Perfluoroundecanoic acid (PFUnA)	0.200	0.0360	ug/Kg

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
140-18101-1	STAKE 66	70	63	70	72	71	75	74	80
140-18101-1 MS	STAKE 66	62	59	65	68	65	68	70	76
140-18101-1 MSD	STAKE 66	68	61	68	71	69	72	76	77
140-18101-2	BAGHOUSE	65	59	67	70	69	69	74	77
140-18101-3	STAKE 67	65	63	66	71	70	68	71	76
140-18101-4	STAKE 68	67	64	71	76	73	74	73	81
140-18101-5	STAKE 69	72	67	72	80	72	76	80	80
140-18101-6	STAKE 70	83	78	87	92	91	94	93	101
140-18101-9	PRETREATED SOIL 1	82	75	81	89	84	87	95	102
LCS 320-354686/2-A	Lab Control Sample	79	75	79	86	83	82	83	94
MB 320-354686/1-A	Method Blank	68	63	68	75	72	76	74	78

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)
140-18101-1	STAKE 66	86	86	71	73	67	63	73	85
140-18101-1 MS	STAKE 66	78	78	63	67	66	62	70	76
140-18101-1 MSD	STAKE 66	87	85	70	72	67	66	72	78
140-18101-2	BAGHOUSE	79	75	63	65	60	65	63	66
140-18101-3	STAKE 67	77	82	65	64	63	69	69	72
140-18101-4	STAKE 68	86	89	70	73	71	73	67	76
140-18101-5	STAKE 69	84	86	72	75	72	74	74	80
140-18101-6	STAKE 70	98	106	84	88	82	87	75	81
140-18101-9	PRETREATED SOIL 1	100	103	81	83	83	90	26	28
LCS 320-354686/2-A	Lab Control Sample	98	98	79	81	75	79	87	88
MB 320-354686/1-A	Method Blank	81	81	69	70	68	70	70	71

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	I-MeFOSA (25-150)	N-EtFOSA (25-150)	NMFM (10-120)	NEFM (10-120)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	HFPODA (25-150)
140-18101-1	STAKE 66	57	56	12	13	70	68	73	60
140-18101-1 MS	STAKE 66	51	47	12	13	69	65	65	52
140-18101-1 MSD	STAKE 66	57	58	11	12	69	69	74	54
140-18101-2	BAGHOUSE	32	29	12	12	41	39	42	56
140-18101-3	STAKE 67	51	51	20	22	66	60	70	62
140-18101-4	STAKE 68	62	61	32	32	67	67	109	59
140-18101-5	STAKE 69	59	60	28	28	66	63	106	64
140-18101-6	STAKE 70	54	57	21	24	59	65	82	73
140-18101-9	PRETREATED SOIL 1	66	67	13	13	86	65	75	73
LCS 320-354686/2-A	Lab Control Sample	65	61	28	27	82	82	78	64
MB 320-354686/1-A	Method Blank	42	37	9 *	10	71	70	67	48

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
d-N-MeFOSA-M = d-N-MeFOSA-M
d-N-EtFOSA-M = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	47	71	77	82	84	83	81	76
140-18101-7 DU	SCRUBBER WATER	39	52	61	63	63	67	66	68
140-18101-8	FRESH WATER	75	84	93	96	96	97	98	91
LCS 320-354584/2-A	Lab Control Sample	103	95	98	101	100	98	103	100
LCSD 320-354584/3-A	Lab Control Sample Dup	99	92	95	98	100	94	96	92
MB 320-354584/1-A	Method Blank	98	92	93	94	98	95	103	93

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	3C3-PFBS	PFHxS	PFOS	PFOSA	-NMeFOSA	-NEtFOSA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	68	64	80	82	80	81	65	63
140-18101-7 DU	SCRUBBER WATER	66	59	69	67	73	68	50	52
140-18101-8	FRESH WATER	86	81	95	95	97	96	83	83
LCS 320-354584/2-A	Lab Control Sample	103	95	98	97	98	99	88	91
LCSD 320-354584/3-A	Lab Control Sample Dup	95	92	98	98	93	92	84	85
MB 320-354584/1-A	Method Blank	98	97	97	96	95	93	86	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		d-N-MeFOSA-M	d-N-EtFOSA-M	NMFM	NEFM	M242FTS	M262FTS	M282FTS	HFPODA
Lab Sample ID	Client Sample ID	(20-150)	(20-150)	(10-120)	(10-120)	(25-150)	(25-150)	(25-150)	(25-150)
140-18101-7	SCRUBBER WATER	45	38	32	30	90	92	90	61
140-18101-7 DU	SCRUBBER WATER	42	35	25	21	74	80	82	41
140-18101-8	FRESH WATER	64	56	43	39	87	84	86	81
LCS 320-354584/2-A	Lab Control Sample	65	49	34	26	86	88	84	76
LCSD 320-354584/3-A	Lab Control Sample Dup	63	46	29	26	79	88	87	91
MB 320-354584/1-A	Method Blank	65	50	32	27	83	81	83	105

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA

Isotope Dilution Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
d-N-MeFOSA-M = d-N-MeFOSA-M
d-N-EtFOSA-M = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
HFPODA = 13C3 HFPO-DA

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-354584/1-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354584

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.9460	J	2.00	0.350	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoropentanoic acid (PFPeA)	ND		2.00	0.490	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorohexanoic acid (PFHxA)	ND		2.00	0.580	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroheptanoic acid (PFHpA)	ND		2.00	0.250	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanoic acid (PFOA)	ND		2.00	0.850	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorononanoic acid (PFNA)	ND		2.00	0.270	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorodecanoic acid (PFDA)	ND		2.00	0.310	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroundecanoic acid (PFUnA)	ND		2.00	1.10	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorododecanoic acid (PFDoA)	ND		2.00	0.550	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorotridecanoic acid (PFTriA)	ND		2.00	1.30	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.00	0.290	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.00	0.200	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.00	0.300	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.2956	J	2.00	0.170	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.00	0.190	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	0.540	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorononanesulfonic acid (PFNS)	ND		2.00	0.160	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.00	0.320	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorododecanesulfonic acid (PFDoS)	ND		2.00	0.450	ng/L		02/03/20 05:19	02/05/20 07:27	1
Perfluorooctanesulfonamide (FOSA)	0.5098	J	2.00	0.350	ng/L		02/03/20 05:19	02/05/20 07:27	1
NEtFOSA	ND		2.00	0.870	ng/L		02/03/20 05:19	02/05/20 07:27	1
NMeFOSA	ND		2.00	0.430	ng/L		02/03/20 05:19	02/05/20 07:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20.0	3.10	ng/L		02/03/20 05:19	02/05/20 07:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20.0	1.90	ng/L		02/03/20 05:19	02/05/20 07:27	1
NMeFOSE	ND		4.00	1.40	ng/L		02/03/20 05:19	02/05/20 07:27	1
NEtFOSE	ND		2.00	0.850	ng/L		02/03/20 05:19	02/05/20 07:27	1
4:2 FTS	ND		20.0	5.20	ng/L		02/03/20 05:19	02/05/20 07:27	1
6:2 FTS	ND		20.0	2.00	ng/L		02/03/20 05:19	02/05/20 07:27	1
8:2 FTS	ND		20.0	2.00	ng/L		02/03/20 05:19	02/05/20 07:27	1
10:2 FTS	0.1944	J	2.00	0.190	ng/L		02/03/20 05:19	02/05/20 07:27	1
DONA	ND		2.00	0.180	ng/L		02/03/20 05:19	02/05/20 07:27	1
HFPO-DA (GenX)	ND		4.00	1.50	ng/L		02/03/20 05:19	02/05/20 07:27	1
F-53B Major	ND		2.00	0.240	ng/L		02/03/20 05:19	02/05/20 07:27	1
F-53B Minor	ND		2.00	0.320	ng/L		02/03/20 05:19	02/05/20 07:27	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C5 PFPeA	*92*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFHxA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C4 PFHpA	*94*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C4 PFOA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C5 PFNA	*95*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFDA	*103*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFUnA	*93*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*
13C2 PFDoA	*98*		*25 - 150*	*02/03/20 05:19*	*02/05/20 07:27*	*1*

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

Lab Sample ID: MB 320-354584/1-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	97		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C3 PFBS	97		25 - 150	02/03/20 05:19	02/05/20 07:27	1
18O2 PFHxS	96		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C4 PFOS	95		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C8 FOSA	93		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d3-NMeFOSAA	86		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d5-NEtFOSAA	90		25 - 150	02/03/20 05:19	02/05/20 07:27	1
d-N-MeFOSA-M	65		20 - 150	02/03/20 05:19	02/05/20 07:27	1
d-N-EtFOSA-M	50		20 - 150	02/03/20 05:19	02/05/20 07:27	1
d7-N-MeFOSE-M	32		10 - 120	02/03/20 05:19	02/05/20 07:27	1
d9-N-EtFOSE-M	27		10 - 120	02/03/20 05:19	02/05/20 07:27	1
M2-4:2 FTS	83		25 - 150	02/03/20 05:19	02/05/20 07:27	1
M2-6:2 FTS	81		25 - 150	02/03/20 05:19	02/05/20 07:27	1
M2-8:2 FTS	83		25 - 150	02/03/20 05:19	02/05/20 07:27	1
13C3 HFPO-DA	105		25 - 150	02/03/20 05:19	02/05/20 07:27	1

Lab Sample ID: LCS 320-354584/2-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	38.61		ng/L		97	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	40.60		ng/L		102	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	38.15		ng/L		95	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	38.10		ng/L		95	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	37.03		ng/L		93	70 - 130
Perfluorononanoic acid (PFNA)	40.0	40.78		ng/L		102	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	35.35		ng/L		88	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	34.46		ng/L		86	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	38.93		ng/L		97	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.75		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	39.89		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	34.96		ng/L		99	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.42		ng/L		100	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.66		ng/L		92	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.70		ng/L		102	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	36.04		ng/L		97	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	37.44		ng/L		97	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.31		ng/L		97	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	38.7	40.37		ng/L		104	67 - 127

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

Lab Sample ID: LCS 320-354584/2-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonamide (FOSA)	40.0	38.55		ng/L		96	73 - 133
NMeFOSA	40.0	41.23		ng/L		103	67 - 154
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.61		ng/L		92	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	36.12		ng/L		90	76 - 136
NMeFOSE	40.0	36.09		ng/L		90	70 - 130
NEtFOSE	40.0	41.89		ng/L		105	71 - 131
4:2 FTS	37.4	35.64		ng/L		95	79 - 139
6:2 FTS	37.9	35.88		ng/L		95	59 - 175
8:2 FTS	38.3	37.28		ng/L		97	75 - 135
10:2 FTS	38.6	36.34		ng/L		94	64 - 142
DONA	37.7	38.81		ng/L		103	79 - 139
HFPO-DA (GenX)	40.0	51.56		ng/L		129	51 - 173
F-53B Major	37.3	36.06		ng/L		97	75 - 135
F-53B Minor	37.7	37.13		ng/L		99	54 - 114

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*103*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4 PFHpA	*101*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*100*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2 PFTeDA	*95*		*25 - 150*
13C3 PFBS	*98*		*25 - 150*
18O2 PFHxS	*97*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*
13C8 FOSA	*99*		*25 - 150*
d3-NMeFOSAA	*88*		*25 - 150*
d5-NEtFOSAA	*91*		*25 - 150*
d-N-MeFOSA-M	*65*		*20 - 150*
d-N-EtFOSA-M	*49*		*20 - 150*
d7-N-MeFOSE-M	*34*		*10 - 120*
d9-N-EtFOSE-M	*26*		*10 - 120*
M2-4:2 FTS	*86*		*25 - 150*
M2-6:2 FTS	*88*		*25 - 150*
M2-8:2 FTS	*84*		*25 - 150*
13C3 HFPO-DA	*76*		*25 - 150*

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	38.07		ng/L		95	76 - 136	1	30

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

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)			40.0	39.81		ng/L		100	71 - 131	2	30
Perfluorohexanoic acid (PFHxA)			40.0	38.68		ng/L		97	73 - 133	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	37.44		ng/L		94	72 - 132	2	30
Perfluorooctanoic acid (PFOA)			40.0	35.68		ng/L		89	70 - 130	4	30
Perfluorononanoic acid (PFNA)			40.0	39.35		ng/L		98	75 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	36.80		ng/L		92	76 - 136	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	36.44		ng/L		91	68 - 128	6	30
Perfluorododecanoic acid (PFDoA)			40.0	40.53		ng/L		101	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.57		ng/L		99	71 - 131	5	30
Perfluorotetradecanoic acid (PFTeA)			40.0	39.05		ng/L		98	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.20		ng/L		97	67 - 127	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	36.10		ng/L		96	66 - 126	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	32.84		ng/L		90	59 - 119	2	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	39.78		ng/L		104	76 - 136	3	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.86		ng/L		97	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)			38.4	41.32		ng/L		108	75 - 135	10	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.12		ng/L		104	71 - 131	7	30
Perfluorododecanesulfonic acid (PFDoS)			38.7	40.36		ng/L		104	67 - 127	0	30
Perfluorooctanesulfonamide (FOSA)			40.0	40.08		ng/L		100	73 - 133	4	30
NMeFOSA			40.0	41.61		ng/L		104	67 - 154	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.12		ng/L		98	76 - 136	7	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	36.88		ng/L		92	76 - 136	2	30
NMeFOSE			40.0	41.81		ng/L		105	70 - 130	15	30
NEtFOSE			40.0	37.83		ng/L		95	71 - 131	10	30
4:2 FTS			37.4	37.26		ng/L		100	79 - 139	4	30
6:2 FTS			37.9	31.92		ng/L		84	59 - 175	12	30
8:2 FTS			38.3	37.09		ng/L		97	75 - 135	1	30
10:2 FTS			38.6	34.95		ng/L		91	64 - 142	4	30
DONA			37.7	40.40		ng/L		107	79 - 139	4	30
HFPO-DA (GenX)			40.0	45.58		ng/L		114	51 - 173	12	30
F-53B Major			37.3	38.39		ng/L		103	75 - 135	6	30
F-53B Minor			37.7	37.71		ng/L		100	54 - 114	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*99*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*

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

Lab Sample ID: LCSD 320-354584/3-A
Matrix: Water
Analysis Batch: 355234

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFHpA	98		25 - 150
13C4 PFOA	100		25 - 150
13C5 PFNA	94		25 - 150
13C2 PFDA	96		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	95		25 - 150
13C2 PFTeDA	92		25 - 150
13C3 PFBS	98		25 - 150
18O2 PFHxS	98		25 - 150
13C4 PFOS	93		25 - 150
13C8 FOSA	92		25 - 150
d3-NMeFOSAA	84		25 - 150
d5-NEtFOSAA	85		25 - 150
d-N-MeFOSA-M	63		20 - 150
d-N-EtFOSA-M	46		20 - 150
d7-N-MeFOSE-M	29		10 - 120
d9-N-EtFOSE-M	26		10 - 120
M2-4:2 FTS	79		25 - 150
M2-6:2 FTS	88		25 - 150
M2-8:2 FTS	87		25 - 150
13C3 HFPO-DA	91		25 - 150

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	1.75	J H H3 B		2.677	F5	ng/L				42	30
Perfluoropentanoic acid (PFPeA)	0.968	J H H3		1.200	J	ng/L				21	30
Perfluorohexanoic acid (PFHxA)	1.03	J H H3		1.367	J	ng/L				28	30
Perfluoroheptanoic acid (PFHpA)	0.677	J H H3		0.9587	J F5	ng/L				34	30
Perfluorooctanoic acid (PFOA)	2.84	H H3		3.798		ng/L				29	30
Perfluorononanoic acid (PFNA)	ND	H H3		ND		ng/L				NC	30
Perfluorodecanoic acid (PFDA)	ND	H H3		ND		ng/L				NC	30
Perfluoroundecanoic acid (PFUnA)	ND	H H3		ND		ng/L				NC	30
Perfluorododecanoic acid (PFDoA)	ND	H H3		ND		ng/L				NC	30
Perfluorotridecanoic acid (PFTriA)	ND	H H3		ND		ng/L				NC	30
Perfluorotetradecanoic acid (PFTeA)	ND	H H3		ND		ng/L				NC	30
Perfluorobutanesulfonic acid (PFBS)	ND	H H3		ND		ng/L				NC	30
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3		ND		ng/L				NC	30
Perfluorohexanesulfonic acid (PFHxS)	ND	H H3		0.5493	J	ng/L				NC	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3		ND		ng/L				NC	30

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

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	ND	H H3		ND		ng/L				NC	30
Perfluorononanesulfonic acid (PFNS)	ND	H H3		ND		ng/L				NC	30
Perfluorodecanesulfonic acid (PFDS)	ND	H H3		ND		ng/L				NC	30
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3		ND		ng/L				NC	30
Perfluorooctanesulfonamide (FOSA)	ND	H H3		1.086	J	ng/L				NC	30
NEtFOSA	ND	H H3		ND		ng/L				NC	30
NMeFOSA	ND	H H3		ND		ng/L				NC	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3		ND		ng/L				NC	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3		ND		ng/L				NC	30
NMeFOSE	ND	H H3		ND		ng/L				NC	30
NEtFOSE	ND	H H3		ND		ng/L				NC	30
4:2 FTS	ND	H H3		ND		ng/L				NC	30
6:2 FTS	4.04	J H H3		4.955	J	ng/L				20	30
8:2 FTS	3.40	J H H3		3.209	J	ng/L				6	30
10:2 FTS	ND	H H3		ND		ng/L				NC	30
DONA	ND	H H3		ND		ng/L				NC	30
HFPO-DA (GenX)	ND	H H3		ND		ng/L				NC	30
F-53B Major	ND	H H3		ND		ng/L				NC	30
F-53B Minor	ND	H H3		ND		ng/L				NC	30

Isotope Dilution	*DU %Recovery*	*DU Qualifier*	*Limits*
13C4 PFBA	*39*		*25 - 150*
13C5 PFPeA	*52*		*25 - 150*
13C2 PFHxA	*61*		*25 - 150*
13C4 PFHpA	*63*		*25 - 150*
13C4 PFOA	*63*		*25 - 150*
13C5 PFNA	*67*		*25 - 150*
13C2 PFDA	*66*		*25 - 150*
13C2 PFUnA	*68*		*25 - 150*
13C2 PFDoA	*66*		*25 - 150*
13C2 PFTeDA	*59*		*25 - 150*
13C3 PFBS	*69*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*73*		*25 - 150*
13C8 FOSA	*68*		*25 - 150*
d3-NMeFOSAA	*50*		*25 - 150*
d5-NEtFOSAA	*52*		*25 - 150*
d-N-MeFOSA-M	*42*		*20 - 150*
d-N-EtFOSA-M	*35*		*20 - 150*
d7-N-MeFOSE-M	*25*		*10 - 120*
d9-N-EtFOSE-M	*21*		*10 - 120*
M2-4:2 FTS	*74*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*

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

Lab Sample ID: 140-18101-7 DU
Matrix: Water
Analysis Batch: 355234

Client Sample ID: SCRUBBER WATER
Prep Type: Total/NA
Prep Batch: 354584

Isotope Dilution	DU %Recovery	DU Qualifier	Limits
M2-8:2 FTS	*82*		*25 - 150*
13C3 HFPO-DA	*41*		*25 - 150*

Lab Sample ID: MB 320-354686/1-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354686

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.05710	J	0.200	0.0280	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoropentanoic acid (PFPeA)	ND		0.200	0.0770	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorohexanoic acid (PFHxA)	ND		0.200	0.0420	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroheptanoic acid (PFHpA)	ND		0.200	0.0290	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanoic acid (PFOA)	ND		0.200	0.0860	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorononanoic acid (PFNA)	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorodecanoic acid (PFDA)	ND		0.200	0.0220	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroundecanoic acid (PFUnA)	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorododecanoic acid (PFDoA)	ND		0.200	0.0670	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorotridecanoic acid (PFTriA)	ND		0.200	0.0510	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.200	0.0540	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.200	0.0250	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.200	0.0200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.200	0.0310	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.200	0.0350	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.500	0.200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorononanesulfonic acid (PFNS)	ND		0.200	0.0200	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.200	0.0390	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.200	0.0600	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
Perfluorooctanesulfonamide (FOSA)	ND		0.200	0.0820	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NEtFOSA	ND		0.200	0.0240	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NMeFOSA	ND		0.200	0.0410	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	0.390	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	0.370	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NMeFOSE	ND		0.200	0.0710	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
NEtFOSE	ND		0.200	0.0360	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
4:2 FTS	ND		2.00	0.370	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
6:2 FTS	ND		2.00	0.150	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
8:2 FTS	ND		2.00	0.250	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
10:2 FTS	ND		0.200	0.0500	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
DONA	ND		0.200	0.0180	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
HFPO-DA (GenX)	ND		0.250	0.110	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
F-53B Major	ND		0.200	0.0270	ug/Kg		02/03/20 11:18	02/10/20 08:32	1
F-53B Minor	ND		0.200	0.0220	ug/Kg		02/03/20 11:18	02/10/20 08:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*68*		*25 - 150*	*02/03/20 11:18*	*02/10/20 08:32*	*1*

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

Lab Sample ID: MB 320-354686/1-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	63		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFHxA	68		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFHpA	75		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFOA	72		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C5 PFNA	76		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFDA	74		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFUnA	78		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFDoA	81		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C2 PFTeDA	81		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C3 PFBS	69		25 - 150	02/03/20 11:18	02/10/20 08:32	1
18O2 PFHxS	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C4 PFOS	68		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C8 FOSA	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d3-NMeFOSAA	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d5-NEtFOSAA	71		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d-N-MeFOSA-M	42		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d-N-EtFOSA-M	37		25 - 150	02/03/20 11:18	02/10/20 08:32	1
d7-N-MeFOSE-M	9	*	10 - 120	02/03/20 11:18	02/10/20 08:32	1
d9-N-EtFOSE-M	10		10 - 120	02/03/20 11:18	02/10/20 08:32	1
M2-4:2 FTS	71		25 - 150	02/03/20 11:18	02/10/20 08:32	1
M2-6:2 FTS	70		25 - 150	02/03/20 11:18	02/10/20 08:32	1
M2-8:2 FTS	67		25 - 150	02/03/20 11:18	02/10/20 08:32	1
13C3 HFPO-DA	48		25 - 150	02/03/20 11:18	02/10/20 08:32	1

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.00	2.073		ug/Kg		104	76 - 136
Perfluoropentanoic acid (PFPeA)	2.00	2.032		ug/Kg		102	69 - 129
Perfluorohexanoic acid (PFHxA)	2.00	1.988		ug/Kg		99	71 - 131
Perfluoroheptanoic acid (PFHpA)	2.00	1.940		ug/Kg		97	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	1.874		ug/Kg		94	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.047		ug/Kg		102	73 - 133
Perfluorodecanoic acid (PFDA)	2.00	1.963		ug/Kg		98	72 - 132
Perfluoroundecanoic acid (PFUnA)	2.00	1.862		ug/Kg		93	66 - 126
Perfluorododecanoic acid (PFDoA)	2.00	1.975		ug/Kg		99	71 - 131
Perfluorotridecanoic acid (PFTriA)	2.00	2.069		ug/Kg		103	71 - 131
Perfluorotetradecanoic acid (PFTeA)	2.00	1.859		ug/Kg		93	67 - 127
Perfluorobutanesulfonic acid (PFBS)	1.77	1.691		ug/Kg		96	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.845		ug/Kg		98	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.727		ug/Kg		95	62 - 122

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

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.994		ug/Kg		105	76 - 136
Perfluorooctanesulfonic acid (PFOS)	1.86	1.960		ug/Kg		106	68 - 141
Perfluorononanesulfonic acid (PFNS)	1.92	1.847		ug/Kg		96	72 - 132
Perfluorodecanesulfonic acid (PFDS)	1.93	2.182		ug/Kg		113	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	1.94	2.117		ug/Kg		109	70 - 130
Perfluorooctanesulfonamide (FOSA)	2.00	1.866		ug/Kg		93	77 - 137
NMeFOSA	2.00	2.000		ug/Kg		100	63 - 148
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	1.858	J	ug/Kg		93	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.811	J	ug/Kg		91	72 - 132
NMeFOSE	2.00	1.919		ug/Kg		96	43 - 153
NEtFOSE	2.00	1.854		ug/Kg		93	44 - 155
4:2 FTS	1.87	1.612	J	ug/Kg		86	68 - 143
6:2 FTS	1.90	1.666	J	ug/Kg		88	73 - 139
8:2 FTS	1.92	1.788	J	ug/Kg		93	75 - 135
10:2 FTS	1.93	2.217		ug/Kg		115	69 - 145
DONA	1.88	2.091		ug/Kg		111	79 - 139
HFPO-DA (GenX)	2.00	2.233		ug/Kg		112	53 - 158
F-53B Major	1.86	1.874		ug/Kg		101	74 - 134
F-53B Minor	1.88	2.007		ug/Kg		107	66 - 136

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*79*		*25 - 150*
13C5 PFPeA	*75*		*25 - 150*
13C2 PFHxA	*79*		*25 - 150*
13C4 PFHpA	*86*		*25 - 150*
13C4 PFOA	*83*		*25 - 150*
13C5 PFNA	*82*		*25 - 150*
13C2 PFDA	*83*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*98*		*25 - 150*
13C2 PFTeDA	*98*		*25 - 150*
13C3 PFBS	*79*		*25 - 150*
18O2 PFHxS	*81*		*25 - 150*
13C4 PFOS	*75*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*87*		*25 - 150*
d5-NEtFOSAA	*88*		*25 - 150*
d-N-MeFOSA-M	*65*		*25 - 150*
d-N-EtFOSA-M	*61*		*25 - 150*
d7-N-MeFOSE-M	*28*		*10 - 120*
d9-N-EtFOSE-M	*27*		*10 - 120*
M2-4:2 FTS	*82*		*25 - 150*
M2-6:2 FTS	*82*		*25 - 150*

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

Lab Sample ID: LCS 320-354686/2-A
Matrix: Solid
Analysis Batch: 356091

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-8:2 FTS	78		25 - 150
13C3 HFPO-DA	64		25 - 150

Lab Sample ID: 140-18101-1 MS
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.0537	J H H3 B	1.84	1.775		ug/Kg		94	76 - 136
Perfluoropentanoic acid (PFPeA)	ND	H H3	1.84	1.833		ug/Kg		100	69 - 129
Perfluorohexanoic acid (PFHxA)	0.0752	J H H3	1.84	1.820		ug/Kg		95	71 - 131
Perfluoroheptanoic acid (PFHpA)	ND	H H3	1.84	1.886		ug/Kg		103	71 - 131
Perfluorooctanoic acid (PFOA)	ND	H H3	1.84	1.721		ug/Kg		94	72 - 132
Perfluorononanoic acid (PFNA)	ND	H H3	1.84	1.783		ug/Kg		97	73 - 133
Perfluorodecanoic acid (PFDA)	0.0257	J H H3	1.84	1.854		ug/Kg		99	72 - 132
Perfluoroundecanoic acid (PFUnA)	0.0702	J H H3	1.84	1.826		ug/Kg		96	66 - 126
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.84	1.844		ug/Kg		100	71 - 131
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.84	1.805		ug/Kg		98	71 - 131
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.84	1.787		ug/Kg		97	67 - 127
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.63	1.513		ug/Kg		91	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.72	1.697		ug/Kg		98	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	0.0582	J H H3	1.67	1.493		ug/Kg		86	62 - 122
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.75	1.676		ug/Kg		96	76 - 136
Perfluorooctanesulfonic acid (PFOS)	0.440	J H H3	1.71	1.827		ug/Kg		81	68 - 141
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.76	1.552		ug/Kg		88	72 - 132
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.77	1.780		ug/Kg		100	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.78	1.735		ug/Kg		98	70 - 130
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.84	1.783		ug/Kg		97	77 - 137
NMeFOSA	ND	H H3	1.84	1.764		ug/Kg		96	63 - 148
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.84	1.751	J	ug/Kg		95	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.84	1.739	J	ug/Kg		95	72 - 132
NMeFOSE	ND	H H3	1.84	1.832		ug/Kg		100	43 - 153
NEtFOSE	ND	H H3	1.84	1.740		ug/Kg		95	44 - 155
4:2 FTS	ND	H H3	1.72	1.591	J	ug/Kg		93	68 - 143
6:2 FTS	ND	H H3	1.74	1.514	J	ug/Kg		87	73 - 139
8:2 FTS	ND	H H3	1.76	1.502	J	ug/Kg		85	75 - 135
10:2 FTS	ND	H H3	1.77	2.267		ug/Kg		128	69 - 145
DONA	ND	H H3	1.73	1.727		ug/Kg		100	79 - 139

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

Lab Sample ID: 140-18101-1 MS
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA (GenX)	ND	H H3	1.84	2.155		ug/Kg		117	53 - 158
F-53B Major	ND	H H3	1.71	1.786		ug/Kg		104	74 - 134
F-53B Minor	ND	H H3	1.73	1.653		ug/Kg		95	66 - 136

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*62*		*25 - 150*
13C5 PFPeA	*59*		*25 - 150*
13C2 PFHxA	*65*		*25 - 150*
13C4 PFHpA	*68*		*25 - 150*
13C4 PFOA	*65*		*25 - 150*
13C5 PFNA	*68*		*25 - 150*
13C2 PFDA	*70*		*25 - 150*
13C2 PFUnA	*76*		*25 - 150*
13C2 PFDoA	*78*		*25 - 150*
13C2 PFTeDA	*78*		*25 - 150*
13C3 PFBS	*63*		*25 - 150*
18O2 PFHxS	*67*		*25 - 150*
13C4 PFOS	*66*		*25 - 150*
13C8 FOSA	*62*		*25 - 150*
d3-NMeFOSAA	*70*		*25 - 150*
d5-NEtFOSAA	*76*		*25 - 150*
d-N-MeFOSA-M	*51*		*25 - 150*
d-N-EtFOSA-M	*47*		*25 - 150*
d7-N-MeFOSE-M	*12*		*10 - 120*
d9-N-EtFOSE-M	*13*		*10 - 120*
M2-4:2 FTS	*69*		*25 - 150*
M2-6:2 FTS	*65*		*25 - 150*
M2-8:2 FTS	*65*		*25 - 150*
13C3 HFPO-DA	*52*		*25 - 150*

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.0537	J H H3 B	1.96	1.931		ug/Kg		96	76 - 136	8	30
Perfluoropentanoic acid (PFPeA)	ND	H H3	1.96	2.100		ug/Kg		107	69 - 129	14	30
Perfluorohexanoic acid (PFHxA)	0.0752	J H H3	1.96	2.016		ug/Kg		99	71 - 131	10	30
Perfluoroheptanoic acid (PFHpA)	ND	H H3	1.96	2.068		ug/Kg		105	71 - 131	9	30
Perfluorooctanoic acid (PFOA)	ND	H H3	1.96	1.887		ug/Kg		96	72 - 132	9	30
Perfluorononanoic acid (PFNA)	ND	H H3	1.96	2.040		ug/Kg		104	73 - 133	13	30
Perfluorodecanoic acid (PFDA)	0.0257	J H H3	1.96	1.969		ug/Kg		99	72 - 132	6	30
Perfluoroundecanoic acid (PFUnA)	0.0702	J H H3	1.96	2.053		ug/Kg		101	66 - 126	12	30
Perfluorododecanoic acid (PFDoA)	ND	H H3	1.96	2.113		ug/Kg		108	71 - 131	14	30
Perfluorotridecanoic acid (PFTriA)	ND	H H3	1.96	2.022		ug/Kg		103	71 - 131	11	30
Perfluorotetradecanoic acid (PFTeA)	ND	H H3	1.96	2.082		ug/Kg		106	67 - 127	15	30

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

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	ND	H H3	1.74	1.717		ug/Kg		97	69 - 129	13	30
Perfluoropentanesulfonic acid (PFPeS)	ND	H H3	1.84	1.911		ug/Kg		104	66 - 126	12	30
Perfluorohexanesulfonic acid (PFHxS)	0.0582	J H H3	1.79	1.758		ug/Kg		95	62 - 122	16	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H H3	1.87	1.936		ug/Kg		104	76 - 136	14	30
Perfluorooctanesulfonic acid (PFOS)	0.440	J H H3	1.82	2.114		ug/Kg		92	68 - 141	15	30
Perfluorononanesulfonic acid (PFNS)	ND	H H3	1.89	1.987		ug/Kg		105	72 - 132	25	30
Perfluorodecanesulfonic acid (PFDS)	ND	H H3	1.89	2.115		ug/Kg		112	71 - 131	17	30
Perfluorododecanesulfonic acid (PFDoS)	ND	H H3	1.90	2.005		ug/Kg		105	70 - 130	14	30
Perfluorooctanesulfonamide (FOSA)	ND	H H3	1.96	1.999		ug/Kg		102	77 - 137	11	30
NMeFOSA	ND	H H3	1.96	2.024		ug/Kg		103	63 - 148	14	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H H3	1.96	2.087		ug/Kg		106	72 - 132	18	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H H3	1.96	1.970		ug/Kg		100	72 - 132	12	30
NMeFOSE	ND	H H3	1.96	2.140		ug/Kg		109	43 - 153	15	30
NEtFOSE	ND	H H3	1.96	1.822		ug/Kg		93	44 - 155	5	30
4:2 FTS	ND	H H3	1.83	1.773	J	ug/Kg		97	68 - 143	11	30
6:2 FTS	ND	H H3	1.86	1.696	J	ug/Kg		91	73 - 139	11	30
8:2 FTS	ND	H H3	1.88	1.805	J	ug/Kg		96	75 - 135	18	30
10:2 FTS	ND	H H3	1.89	2.165		ug/Kg		114	69 - 145	5	30
DONA	ND	H H3	1.85	1.966		ug/Kg		106	79 - 139	13	30
HFPO-DA (GenX)	ND	H H3	1.96	2.462		ug/Kg		125	53 - 158	13	30
F-53B Major	ND	H H3	1.83	2.128		ug/Kg		116	74 - 134	17	30
F-53B Minor	ND	H H3	1.85	2.031		ug/Kg		110	66 - 136	21	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*68*		*25 - 150*
13C5 PFPeA	*61*		*25 - 150*
13C2 PFHxA	*68*		*25 - 150*
13C4 PFHpA	*71*		*25 - 150*
13C4 PFOA	*69*		*25 - 150*
13C5 PFNA	*72*		*25 - 150*
13C2 PFDA	*76*		*25 - 150*
13C2 PFUnA	*77*		*25 - 150*
13C2 PFDoA	*87*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
13C3 PFBS	*70*		*25 - 150*
18O2 PFHxS	*72*		*25 - 150*
13C4 PFOS	*67*		*25 - 150*
13C8 FOSA	*66*		*25 - 150*
d3-NMeFOSAA	*72*		*25 - 150*
d5-NEtFOSAA	*78*		*25 - 150*

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

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid
Analysis Batch: 356418

Client Sample ID: STAKE 66
Prep Type: Total/NA
Prep Batch: 354686

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
d-N-MeFOSA-M	57		25 - 150
d-N-EtFOSA-M	58		25 - 150
d7-N-MeFOSE-M	11		10 - 120
d9-N-EtFOSE-M	12		10 - 120
M2-4:2 FTS	69		25 - 150
M2-6:2 FTS	69		25 - 150
M2-8:2 FTS	74		25 - 150
13C3 HFPO-DA	54		25 - 150

LCMS

Prep Batch: 354584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-7	SCRUBBER WATER	Total/NA	Water	3535	
140-18101-8	FRESH WATER	Total/NA	Water	3535	
MB 320-354584/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-354584/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-354584/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
140-18101-7 DU	SCRUBBER WATER	Total/NA	Water	3535	

Prep Batch: 354686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	SHAKE	
140-18101-2	BAGHOUSE	Total/NA	Solid	SHAKE	
140-18101-3	STAKE 67	Total/NA	Solid	SHAKE	
140-18101-4	STAKE 68	Total/NA	Solid	SHAKE	
140-18101-5	STAKE 69	Total/NA	Solid	SHAKE	
140-18101-6	STAKE 70	Total/NA	Solid	SHAKE	
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	SHAKE	
MB 320-354686/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-354686/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
140-18101-1 MS	STAKE 66	Total/NA	Solid	SHAKE	
140-18101-1 MSD	STAKE 66	Total/NA	Solid	SHAKE	

Analysis Batch: 355234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-7	SCRUBBER WATER	Total/NA	Water	537 (modified)	354584
140-18101-8	FRESH WATER	Total/NA	Water	537 (modified)	354584
MB 320-354584/1-A	Method Blank	Total/NA	Water	537 (modified)	354584
LCS 320-354584/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	354584
LCSD 320-354584/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	354584
140-18101-7 DU	SCRUBBER WATER	Total/NA	Water	537 (modified)	354584

Analysis Batch: 356091

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-354686/1-A	Method Blank	Total/NA	Solid	537 (modified)	354686
LCS 320-354686/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	354686

Analysis Batch: 356418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	537 (modified)	354686
140-18101-2	BAGHOUSE	Total/NA	Solid	537 (modified)	354686
140-18101-3	STAKE 67	Total/NA	Solid	537 (modified)	354686
140-18101-4	STAKE 68	Total/NA	Solid	537 (modified)	354686
140-18101-5	STAKE 69	Total/NA	Solid	537 (modified)	354686
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	537 (modified)	354686
140-18101-1 MS	STAKE 66	Total/NA	Solid	537 (modified)	354686
140-18101-1 MSD	STAKE 66	Total/NA	Solid	537 (modified)	354686

Analysis Batch: 356735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-6	STAKE 70	Total/NA	Solid	537 (modified)	354686

QC Association Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

General Chemistry

Analysis Batch: 354660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-18101-1	STAKE 66	Total/NA	Solid	D 2216	
140-18101-2	BAGHOUSE	Total/NA	Solid	D 2216	
140-18101-3	STAKE 67	Total/NA	Solid	D 2216	
140-18101-4	STAKE 68	Total/NA	Solid	D 2216	
140-18101-5	STAKE 69	Total/NA	Solid	D 2216	
140-18101-6	STAKE 70	Total/NA	Solid	D 2216	
140-18101-9	PRETREATED SOIL 1	Total/NA	Solid	D 2216	
140-18101-1 DU	STAKE 66	Total/NA	Solid	D 2216	

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.22 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:12	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: BAGHOUSE
Date Collected: 10/16/19 13:40
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.34 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:42	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 67
Date Collected: 10/16/19 13:45
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.11 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:52	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 68
Date Collected: 10/16/19 13:55
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.50 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:02	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 69
Date Collected: 10/16/19 14:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.11 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:12	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: STAKE 70
Date Collected: 10/16/19 14:25
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.85 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356735	02/12/20 02:52	JY1	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: SCRUBBER WATER
Date Collected: 10/16/19 15:05
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.1 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:51	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: FRESH WATER
Date Collected: 10/16/19 15:20
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.3 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:59	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: PRETREATED SOIL 1
Date Collected: 10/11/19 14:30
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.49 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/11/20 00:32	D1R	TAL SAC
	Instrument ID: A9									
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-354584/1-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:27	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: Method Blank
Lab Sample ID: MB 320-354686/1-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356091	02/10/20 08:32	RS1	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-354584/2-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:35	RS1	TAL SAC
	Instrument ID: A8_N									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 320-354686/2-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.00 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356091	02/10/20 08:42	RS1	TAL SAC
	Instrument ID: A9									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 320-354584/3-A

Date Collected: N/A
Matrix: Water
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			250 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 07:43	RS1	TAL SAC
	Instrument ID: A8_N									

Lab Chronicle

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 MS
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.44 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:22	D1R	TAL SAC
	Instrument ID: A9									

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 MSD
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.09 g	10.0 mL	354686	02/03/20 11:18	MC	TAL SAC
Total/NA	Analysis	537 (modified)		1			356418	02/10/20 23:32	D1R	TAL SAC
	Instrument ID: A9									

Client Sample ID: STAKE 66
Date Collected: 10/16/19 13:10
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-1 DU
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			354660	02/03/20 10:45	HRB	TAL SAC
	Instrument ID: NOEQUIP									

Client Sample ID: SCRUBBER WATER
Date Collected: 10/16/19 15:05
Date Received: 01/30/20 09:15

Lab Sample ID: 140-18101-7 DU
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.6 mL	10.0 mL	354584	02/03/20 05:19	PV	TAL SAC
Total/NA	Analysis	537 (modified)		1			355234	02/05/20 10:57	RS1	TAL SAC
	Instrument ID: A8_N									

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

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

Laboratory: Eurofins TestAmerica, Knoxville

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

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-14-22
ANAB	Dept. of Energy	L2311.01	02-14-22
ANAB	ISO/IEC 17025	L2311	02-13-22
Arkansas DEQ	State	88-0688	06-16-20
California	State	2423	06-30-20
Colorado	State	TN00009	02-29-20 *
Connecticut	State	PH-0223	09-30-21
Florida	NELAP	E87177	06-30-20
Georgia (DW)	State	906	04-13-20
Hawaii	State	NA	04-13-20
Kansas	NELAP	E-10349	11-01-20
Kentucky (DW)	State	90101	01-01-21
Louisiana	NELAP	83979	06-30-20
Louisiana (DW)	State	LA019	12-31-20
Maryland	State	277	03-31-20
Michigan	State	9933	04-13-20
Nevada	State	TN00009	07-31-20
New Hampshire	NELAP	299919	01-17-20 *
New Hampshire	NELAP	299919	01-17-21
New Jersey	NELAP	TN001	06-30-20
New York	NELAP	10781	03-31-20
North Carolina (DW)	State	21705	07-31-20
North Carolina (WW/SW)	State	64	12-31-20
Ohio VAP	State	CL0059	08-28-20
Oklahoma	State	9415	09-01-20
Oregon	NELAP	TNI0189	01-02-21
Pennsylvania	NELAP	68-00576	12-31-20
Tennessee	State	02014	04-13-20
Texas	NELAP	T104704380-18-12	08-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-19-00236	08-20-22
Utah	NELAP	TN00009	07-31-20
Virginia	NELAP	460176	09-15-20
Washington	State	C593	01-19-20 *
Washington	State	C593	01-19-21
West Virginia (DW)	State	9955C	12-31-19 *
West Virginia (DW)	State	9955C	01-01-21
West Virginia DEP	State	345	04-30-20
Wisconsin	State	998044300	08-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: U.S. Environmental Protection Agency
Job ID: 140-18101-1
Project/Site: EPA OIT/NRC PFAS Test

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
California	State	2897	01-31-20 *
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-20 *
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Michigan	State	9947	01-29-20 *
Nevada	State	CA000442020-1	07-31-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20 *
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19 *
West Virginia (DW)	State	9930C	12-31-20
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

Sample Summary

Client: U.S. Environmental Protection Agency
Project/Site: EPA OIT/NRC PFAS Test

Job ID: 140-18101-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-18101-1	STAKE 66	Solid	10/16/19 13:10	01/30/20 09:15	
140-18101-2	BAGHOUSE	Solid	10/16/19 13:40	01/30/20 09:15	
140-18101-3	STAKE 67	Solid	10/16/19 13:45	01/30/20 09:15	
140-18101-4	STAKE 68	Solid	10/16/19 13:55	01/30/20 09:15	
140-18101-5	STAKE 69	Solid	10/16/19 14:10	01/30/20 09:15	
140-18101-6	STAKE 70	Solid	10/16/19 14:25	01/30/20 09:15	
140-18101-7	SCRUBBER WATER	Water	10/16/19 15:05	01/30/20 09:15	
140-18101-8	FRESH WATER	Water	10/16/19 15:20	01/30/20 09:15	
140-18101-9	PRETREATED SOIL 1	Solid	10/11/19 14:30	01/30/20 09:15	

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

ATT: Ken Krebs

140-18101 Chain of Custody

ARES
P.O. Box 83050
Fairbanks, Alaska99708
Phone: 907.374.3226
Fax: 907.374.2319

Chain of Custody Report

Client: Alaska Resources and Environmental Services

Report To: Lyle Gresehover
Address: ARES
P.O. Box 83050
Email: lyle@ak-res.com
Phone: 907.374.3226 Fax: 907.374.3219

Project Name: EPA OIT/NRC PFAS test
NPDL Number:
Sampled By: Mark Carpenter

Location: Moose Creek, Alaska incineration plant OIT/NRC
EPA PFAS Test

Laboratory Name:
Address:
Phone:

P.O. Number:

Turnaround Request
In Business Days

Organic & Inorganic Analyses: 15 | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1

Specify Other:
Report Tier Levels:

	Sample Identification	Sampling Date/ Time		Preservative: NA	NA	NA	NA	NA	NA	NA	Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
				Requested Analyses										
1														
2													NO CUSTODY SEALS	
3													RECEIVED AT RT 8.6/CT 8.6°C	
*	Stake 66	10/16/19	1310	Containers	#2567, #2575						S	1	BXD 1-30-20	
	Baghouse	10/16/19	1340	"	#2600, #2599						S	1	1 COOLER VPS#	
	Stake 67	10/16/19	1345	"	#2576, #2583						S	1	1ZA5E7620197881606 NDA	
	Stake 68	10/16/19	1355	"	#2584, #2586						S	1		
	Stake 69	10/16/19	1410	"	#2589, #2593						S	1		
	Stake 70	10/16/19	1425	"	#2594, #2588						S	1		
5	~~Paint used in stack~~	~~10/16/19~~	~~1320~~								O	1		
6	~~Untreated Soil~~	~~10/16/19~~	~~1445~~								S	2		
7	Scrubber Water	10/16/19	1505	As IS							S	2		
8	Fresh Water	10/16/19	1520	As IS							W	2		
9		10/16/19												
10		10/16/19												

Released By: Mark A. Carpenter
Print Name: Mark A. Carpenter Firm: ARES Date: 10/17/19 Time: 1100

Received By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: 22 Oct 2019 Time:

Released By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: Time:

Received By: Bryan Damerin
Print Name: BRYAN DAMERIN Firm: ETA-KNIK Date: 1-30-20 Time: 09:15

Additional Remarks:

Temp:

Page 1 of 1

COC REV 02/2008

ALASKA RESOURCES AND ENVIRONMENTAL SERVICES

ARES
P.O. Box 83050
Fairbanks, Alaska99708
Phone: 907.374.3226
Fax: 907.374.2319

Att: Ken Krebs

Chain of Custody Report

Client: Alaska Resources and Environmental Services

Report To: Lyle Gresehover
Address: ARES
P.O. Box 83050
Email: lyle@ak-res.com
Phone: 907.374.3226 Fax: 907.374.3219

Project Name: EPA OIT/NRC PFAS test
NPDL Number:
Sampled By: Mark Carpenter

Location: Moose Creek, Alaska incineration plant OIT/NRC
EPA PFAS Test

Laboratory Name:
Address:
Phone:

P.O. Number:

Turnaround Request
In Business Days

Organic & Inorganic Analyses

15	7	5	4	3	2	1	<1

Petroleum Hydrocarbon Analyses

5	4	3	2	1	<1

Specify Other:
Report Tier Levels:

Preservative: NA | NA | NA | NA | NA | NA | NA

Requested Analyses

	Sample Identification	Sampling Date/ Time		Matrix (W,S,O)	# of Cont.	Location / Comments	Lab ID
1	Pretreated soil 1	10/11/19	1410	S	1		
2	Pretreated soil 1	10/11/19	1420	S	1		
3	Pretreated soil 1	10/11/19	1425	S	1		
	Pretreated soil 1	10/11/19	1430	S	1		
	~~Fresh Water 1~~	~~10/11/19~~	~~1445~~	W	4		
	~~Fresh Water 2~~	~~10/11/19~~	~~1455~~	W	4		
9							
10							

Combined into "Pre 1, 2, 3, 4" Container #2564 & #2574

Released By: Mark A Carpenter
Print Name: Mark A. Carpenter Firm: ARES Date: 10/17/19 Time: 1100

Received By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: 22 Oct 2019 Time:

Released By: Ken Krebs
Print Name: Ken Krebs Firm: EPA Date: Time:

Received By: Bryan Vanover
Print Name: BRYAN DAMERON Firm: ETA KNX Date: 1-31-20 Time: 09:15

Additional Remarks:

Temp:

COC REV 02/2008

Loc: 140
18101

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	✓			☐ Containers, Broken	4
2. Were ambient air containers received intact?			✓	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?			✓	☐ Yes ☐ NA	7, SCRUBBER WATER, LISTED ON COC AS SOIL, SHOULD BE WATER
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : S668 Correction factor: 0.0		✓		☑ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt	14, NO RELINQUISHED DATE OR TIME
5. Were all of the sample containers received intact?	✓			☐ Containers, Broken	15
6. Were samples received in appropriate containers?	✓			☐ Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ COC & Samples Do Not Match ☑ COC Incorrect/Incomplete ☐ COC Not Received	
8. Were all of the samples listed on the COC received?	✓			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	✓			☐ COC; No Date/Time; Client Contacted	
10. Was the sampler identified on the COC?	✓			☐ Sampler Not Listed on COC	**Labeling Verified by:** **Date:**
11. Is the client and project name/# identified?	✓			☐ COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	✓			☐ COC No tests on COC	**pH test strip lot number:**
13. Is the matrix of the samples noted?	✓			☐ COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)		✓		☑ COC Incorrect/Incomplete	
15. Were samples received within holding time?		✓		☑ Holding Time - Receipt	
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative	
17. Were VOA samples received without headspace?			✓	☐ Headspace (VOA only)	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ Residual Chlorine	
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info	

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: _____ PM Instructions: _____

Sample Receiving Associate: _____ Date: 1-30-20

QA026R32.doc, 062719

2/18/2020

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-7070.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-18101-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 2/13/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: EPA OIT/NRC PFAS Test	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Shake_Bath_14D PFAS, Extended List (36 Analytes)	PFC_IDA/3535_PFC PFAS, Extended List (36 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
STAKE 66 (140-18101-1)	10/16/19	13:10 Alaskan		Solid			X		2	
STAKE 66 (140-18101-1MS)	10/16/19	13:10 Alaskan	MS	Solid			X		1	
STAKE 66 (140-18101-1MSD)	10/16/19	13:10 Alaskan	MSD	Solid			X		1	
BAGHOUSE (140-18101-2)	10/16/19	13:40 Alaskan		Solid			X		2	
STAKE 67 (140-18101-3)	10/16/19	13:45 Alaskan		Solid			X		2	
STAKE 68 (140-18101-4)	10/16/19	13:55 Alaskan		Solid			X		2	
STAKE 69 (140-18101-5)	10/16/19	14:10 Alaskan		Solid			X		2	
STAKE 70 (140-18101-6)	10/16/19	14:25 Alaskan		Solid			X		2	
SCRUBBER WATER (140-18101-7)	10/16/19	15:05 Alaskan		Water				X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	1-30-20 12:45	ETA Knx	Juan Guzman	1/31/20 - 9:00	ETA-SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.7

Ver: 01/16/2019

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-7070.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Alaska	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 140-18101-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 2/13/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: EPA OIT/NRC PFAS Test	Project #: 14005570			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/Shake_Bath_14D PFAS, Extended List (36 Analytes)	PFC_IDA/3535_PFC PFAS, Extended List (36 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
SCRUBBER WATER (140-18101-7MS)	10/16/19	15:05 Alaskan	MS	Water				X	1	
SCRUBBER WATER (140-18101-7MSD)	10/16/19	15:05 Alaskan	MSD	Water				X	1	
FRESH WATER (140-18101-8)	10/16/19	15:20 Alaskan		Water				X	2	
PRETREATED SOIL 1 (140-18101-9)	10/11/19	14:30 Alaskan		Solid			X		2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the labo

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	1-30-20 12:45	ETA KNX	Juan Guzman	1/31/20 - 9:00	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1-7

Ver: 01/16/2019

eurofins | Environment Testing TestAmerica

Sacramento Sample Receiving Notes

140-18101 Field Sheet

Job: _____

Tracking # : 4395-7838-7620

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

GSO / OnTrac / Goldstreak / USPS / Other _____

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

Notes: _____

Therm. ID: AK-12 Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 1.7 °C Corrected: 1.7 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Samples received within holding time?	☑	☐	☐

Initials: JG Date: 1/31/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

Non-conformance	Yes	No	NA
NCM Filed?	☐	☐	☑

Initials: JG Date: 1/31/20

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

W13-A

Login Sample Receipt Checklist

Client: U.S. Environmental Protection Agency

Job Number: 140-18101-1

Login Number: 18101
List Number: 2
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento
List Creation: 01/31/20 12:46 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	